



FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

The Effect of Strategic Industry Factor Innovation on Incumbent Reaction, Survival, and Performance

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Summary

An industry is constantly in evolution. Competitors, innovators, or other industry stakeholders can introduce new, ‘unknown’ resources or capabilities that increase the basis of competition in an industry. Resources and capabilities that form the basis of industry competition and that drive firm performance are called ‘strategic industry factors’ (Amit and Schoemaker 1993). I define the introduction of new strategic industry factors as ‘strategic industry factor innovation’. Examples include Pfizer introducing new patents and technological knowhow, or Intel building strong brand equity while standing on the shoulders of giant computer manufacturers. However, there are also strategic industry factor innovations associated with ‘known’ resources and capabilities. When considering new business models like Netflix, Zara, Dell, iPod/iTunes, amongst many others, the innovation is not always bringing ‘new’ resources or capabilities to the industry. Instead, these examples show that new combinations of existing, ‘known’ resources and capabilities can also be difficult for incumbents to react against or for new entrants to successfully launch.

In this dissertation I bundle three studies that relate to the concepts of strategic industry factors and strategic industry factor innovation. Theory states that firm performance is determined from the overlap between a firm’s resource bundle and what resources are needed to compete in its product market(s). It reflects the close interconnection between a firm’s resources and its products (Penrose 1959; Wernerfelt 1984). The concept of a firm’s dynamic capability builds further on the idea of developing an appropriate resource bundle to be competitive with respect to an industry’s strategic factors (e.g., Helfat et al. 2007; Teece, Pisano, and Shuen 1997). In a **first study, entitled “Growth Implications of Within-Industry Diversification: a Paradox between Resource Creation and Leverage”**, I use these ideas to theorize and model how diversification across product markets in a single industry relates to firm growth. Thereby I link diversification closely to the underlying resource mechanisms that are initiated by deploying a dynamic capability while entering new product markets. I show that within-industry diversification leads to firm growth, based on underlying resource mechanisms such as resource creation, leverage, and configuration. Another key contribution is that I empirically show a simultaneous, negative reciprocity between resource creation and leverage which constitutes a core paradox when deploying a dynamic capability.

In a second part of this dissertation, I focus on a particular type of strategic industry factor innovation, i.e., new business models. Despite a surge in research on new business models in both popular press and academia, it is still surrounded with a high level of uncertainty because of its often disruptive character towards both the demand and supply side in an incumbent industry. I target two main areas of uncertainty related to new business models. First, there is a lack of knowledge on how to successfully launch a business model. For every innovator with a new business model, there are numerous copycats launching the same business model in a particular geographic market. However, there are large differences in success across market launches of the same business model. The **second study, entitled “Success Drivers of Launching a Business Model”**, addresses the lack of empirical and theoretical guidance on how ventures can succeed when launching a business model. I focus on four market entry decisions, i.e., entry timing, product adaptation, scale of entry, and strategic control, that influence the business model’s value drivers and ability to create and capture value. I find important main and interaction effects on how these entry decisions impact the survival chances of the launched business model. Thereby I argue it is important to treat the business model

as a separate unit of analysis, different from industry, firm, product, or technology. Moreover, I theoretically and empirically show that there are not only differences but also an interplay between the business model and a product market strategy, which holds important consequences for the market entry literature.

Second, there is lack of knowledge on how firms can reduce their uncertainty with respect to launching a business model. Especially for incumbents, it is difficult deciding when to enter the new market niche related to a business model innovation. Incumbents face severe financial and managerial risks related to a lack of information on the new market niche. I focus on entry timing because of its important short- and long-term performance implications (Gielens and Dekimpe 2001; Green, Barclay, and Ryans 1995), and because the second study reveals important main and interaction effects of entry timing on newly launched business model's survival chances. In the **third study, entitled "Learning and Signals Across Firms and Markets: Identifying Entry Spillover Types and Moderators"**, I study what information signals actually influence an incumbent's entry timing decision and how these signals influence that decision. I focus on information signals related to previous market niche entries. I model different types and moderators of entry spillover, i.e., previous market niche entries that influence a focal market niche entry decision. I make a strong contribution to the market entry and scanning literature by taking into account signals from both served and non-served geographic environments and by modelling the actual instead of potential influence of signals on firm decision-making. I find that incumbents' entry timing is influenced by three different types of entry spillover. I show the existence of a type of entry spillover that is neglected in the literature, i.e., across firm across market entry spillover, that embodies an indirect effect among non-directly competing firms across different geographic markets. Also, I model and find particular firm and market characteristics that moderate entry spillover across firms respectively markets. It implies that entry spillover is non-linear, heterogeneous, and asymmetric.

For each study I develop a unique, longitudinal data set based on secondary data sources. I collect data across various countries in two different industries. For studies 1 and 2, I model the collected data using the 'classical' maximum likelihood estimation method, and use a three-stage least squares growth model (study 1), and a Cox Proportional Hazards survival model (study 2). For study 3, I use a simulated maximum likelihood estimation based on Metropolis-Hastings algorithms, i.e., a Markov Chain Monte Carlo method, for a Bayesian hazard entry timing model. Another important methodological contribution includes the development of a time-varying, continuous, and indirect measure of product market relatedness to closely link diversification decisions with underlying resource mechanisms in study 1 which can be easily applied in different industry contexts. Also, I develop in study 3 a realistic and flexible entry timing model that accounts for a possibly non-monotonic event rate, a permanent survivor fraction, and potentially asymmetric spillover effects.

With this dissertation, I make some important theoretical and managerial contributions. Study 1 provides theoretical and empirical argumentation for a link between within-industry diversification and growth performance. Also, study 1 contributes to the dynamic capability literature by empirically identifying a core paradox that is taking place when deploying a dynamic capability. Moreover, I contribute to the resource-based theory by further exploring and developing the link between a firm's resources and products. Managerial practice benefits through the insights on how

firms can grow by diversification while being aware of negative, internal frictions that form constraints at different levels in the organization. Study 2 adds to the literature on business models, innovation, and market entry by focusing on how ventures can successfully launch a business model in an existing industry and by acknowledging that business models are a different unit of analysis, distinct from the product, technology, firm, or industry. It spurs further research on how business model innovation is different from other types of innovation. Moreover, study 2 enables managers, entrepreneurs, and public authorities to better foresee and predict success and failure in new, disruptive market niches following business model innovation. Study 3 contributes to the market entry, scanning, and signaling literature by showing which information signals actually (instead of potentially) influence a firm's market entry decision while taking into account signals from both served and non-served geographic environments. Also, I identify the co-existence of both direct and indirect signals related to market entry. Moreover, I detect firm and market characteristics that increase signal strength and I model the influence of signals on firm behavior more realistically taking into account characteristics of signal senders and receivers. My research informs managers to develop a better scanning system to capture all relevant information signals, both strong and weak, without creating data overload.

After this summary (and the summary in Dutch hereafter), I first proceed with an introduction in which I specify previous research findings across the relevant research domains, existing literature gaps, and how I address these gaps in the three studies in this dissertation. Second, I explain the research design and methodology I applied to conduct the different studies. Third, I include study 1, 2, and 3 in paper format. Fourth, I give an overview of the main findings and contributions. Fifth, I conclude with some future research opportunities.

Samenvatting

Een industrie is voortdurend in beweging. Concurrenten, innovators, of andere stakeholders introduceren nieuwe, 'onbekende' productiefactoren of competenties die het concurrentieniveau in een industrie verhogen. Productiefactoren en competenties die de concurrentiebasis uitmaken in een industrie en bedrijfsprestaties bepalen worden 'strategische industriefactoren' genoemd (Amit and Schoemaker 1993). Ik definieer de introductie van nieuwe strategische industriefactoren als 'strategische industriefactor innovatie'. Voorbeelden hiervan zijn o.a. Pfizer die nieuwe patenten en technologische knowhow introduceert, of Intel die een sterk merk opbouwt dankzij samenwerking met computergiganten. Er zijn echter ook strategische industriefactor innovaties die gebruik maken van 'bekende' productiefactoren en competenties. Bij nieuwe bedrijfsmodellen zoals die van Netflix, Zara, Dell, iPod / iTunes, e.a., is de innovatie niet altijd het brengen van 'nieuwe' productiefactoren of competenties in de industrie. In plaats daarvan laten deze voorbeelden zien dat nieuwe combinaties van bestaande, 'bekende' productiefactoren en competenties ook moeilijk kunnen zijn voor bestaande bedrijven om op te reageren of voor nieuwkomers om succesvol te lanceren.

In dit proefschrift bundel ik drie studies die betrekking hebben op de concepten van strategische industriefactoren en strategische industriefactor innovatie. De theorie zegt dat bedrijfsprestaties worden bepaald op basis van de overlap tussen de verzameling productiefactoren van een bedrijf (cf., hieronder worden zowel productiefactoren als competenties begrepen) en de middelen nodig om te concurreren in de productmarkt (en). Het weerspiegelt de nauwe koppeling tussen de productiefactoren van een bedrijf en haar producten (Penrose 1959; Wernerfelt 1984). Het concept 'dynamische competentie' van een bedrijf bouwt verder op het idee dat bedrijven, om succesvol te zijn, een gepaste bundel productiefactoren moeten ontwikkelen op basis van de strategische factoren van een industrie (bvb. Helfat et al. 2007; Teece, Pisano en Shuen 1997). In een **eerste studie met als titel "Diversificatie Binnen een Industrie en Bedrijfsgroei: Een Paradox Tussen de Creatie en het Opnieuw Aanwenden van Productiefactoren"**, gebruik ik deze ideeën om een theorie en model te ontwikkelen met betrekking tot hoe diversificatie in productmarkten binnen een industrie kan leiden tot bedrijfsgroei. Daarbij link ik diversificatie nauw met de onderliggende processen die worden gebruikt bij het aanwenden van een dynamische competentie om de gepaste productiefactoren te hebben bij het binnentreden van nieuwe productmarkten. Ik toon aan dat diversificatie binnen een industrie leidt tot bedrijfsgroei waarbij de groei gebaseerd is op de onderliggende processen van een dynamische competentie, zijnde de creatie, het opnieuw aanwenden, en de configuratie van productiefactoren. Een andere belangrijke bijdrage is dat ik empirisch aantoon dat er een simultane, negatieve wederkerigheid bestaat tussen het creëren en opnieuw aanwenden van productiefactoren wat een belangrijke paradox vormt bij de inzet van een dynamische competentie.

In het tweede deel van dit proefschrift richt ik me op een bepaald type van strategische industriefactor innovatie, met name innovatie van bedrijfsmodellen. Ondanks de sterke aandacht voor onderzoek naar nieuwe bedrijfsmodellen in zowel de populair-wetenschappelijke als academische wereld, heerst er nog altijd grote onzekerheid wanneer een nieuw bedrijfsmodel geïntroduceerd wordt en dit vanwege het vaak ontwrichtende karakter van het nieuwe bedrijfsmodel aan zowel vraag-als aanbodzijde van de gevestigde industrie. Ik richt me op twee belangrijke deelgebieden met betrekking tot nieuwe bedrijfsmodellen. Ten eerste is er een gebrek

aan kennis over hoe je een bedrijfsmodel succesvol kunt lanceren. Voor elke innovator met een nieuw bedrijfsmodel zijn er meerdere copycats die hetzelfde bedrijfsmodel in een bepaalde geografische markt lanceren. Er zijn echter grote verschillen qua succes overheen introducties van hetzelfde bedrijfsmodel. De **tweede studie met als titel "Succes Drivers bij het Lanceren van een Bedrijfsmodel"**, onderzoekt empirisch en theoretisch hoe ventures kunnen slagen bij lanceren van een bedrijfsmodel. Ik focus op vier belangrijke introductiebeslissingen bij het binnentreden op een markt, met name introductietiming, productaanpassing, productieschaal, en strategische controle. Deze beslissingen hebben een belangrijke invloed op de onderliggende waardedimensies van een bedrijfsmodel, en de mogelijkheid van een bedrijfsmodel om waarde te creëren en capteren. Ik vind belangrijke lineaire en niet-lineaire effecten van deze introductiebeslissingen op de overlevingskansen van een bedrijfsmodel. Een belangrijk punt hierbij is dat het bedrijfsmodel als een afzonderlijke eenheid van analyse moet worden behandeld, verschillend van industrie, bedrijf, product, of technologie. Bovendien maak ik theoretisch en empirisch de suggestie dat er niet alleen verschillen zijn, maar ook een wisselwerking is tussen het bedrijfsmodel en een productmarkt strategie, wat belangrijke gevolgen heeft voor de literatuur rond marktintroducties.

Ten tweede is er een gebrek aan kennis over hoe bedrijven hun onzekerheid kunnen verminderen met betrekking tot het lanceren van een bedrijfsmodel. Vooral voor gevestigde bedrijven is het moeilijk om te beslissen wanneer een nieuwe marktniche, gerelateerd aan een bedrijfsmodelinnovatie, binnen te treden. Voor bestaande bedrijven zijn er ernstige financiële -en managementrisico's verbonden aan een gebrek aan informatie over de nieuwe marktniche. Ik focus op introductietiming vanwege de belangrijke korte-en lange-termijn implicaties op bedrijfsprestaties (Gielens en Dekimpe 2001; Green, Barclay, en Ryans 1995), en omdat de tweede studie belangrijke effecten van introductietiming op de overlevingskansen van een bedrijfsmodel blootlegt. In de **derde studie met als titel "Kennis en Signalen Overheen Bedrijven en Markten: Het Identificeren van Marktintroductie Spillover Types en Moderators"**, bestudeer ik welke informatiesignalen daadwerkelijk de introductietiming van een bestaand bedrijf in de nieuwe marktniche beïnvloeden en hoe deze signalen die beslissing beïnvloeden. Ik focus op de informatiesignalen die slaan op eerdere introducties in de marktniche. Ik giet verschillende types en moderators van marktintroductie spillover, dat wil zeggen vorige introducties in de marktniche die invloed uitoefenen op een huidige introductie in de marktniche, in een model. Ik maak een sterke bijdrage tot de marktintroductie literatuur en de literatuur met betrekking tot het scannen van de markt door rekening te houden met signalen van markten waarin een bedrijf zowel aanwezig als niet aanwezig is, en door het modelleren van de werkelijke in plaats van de potentiële invloed van signalen op bedrijfsbeslissingen. De derde studie onderzoekt of de introductietiming van bedrijven wordt beïnvloed door drie verschillende types van marktintroductie spillover. Ik ontdek zowel conceptueel als empirisch het bestaan van een nieuw type marktintroductie spillover, namelijk marktintroductie spillover overheen bedrijven en overheen markten wat impliceert dat er een indirect effect is onder niet-rechtstreeks concurrerende bedrijven overheen verschillende geografische markten. Ook vind ik bedrijfs- en marktkenmerken die marktintroductie spillover overheen bedrijven respectievelijk markten versterken of afzwakken. Het impliceert dat marktintroductie spillover niet-lineair, heterogeen, en asymmetrisch is.

Voor elke studie ontwikkel ik een unieke, longitudinale dataset op basis van secundaire gegevensbronnen. Ik verzamel gegevens overheen verschillende landen in twee verschillende

industrieën. Voor studies 1 en 2 modelleer ik de gegevens met behulp van de 'klassieke' maximum likelihood schattingsmethode, en gebruik ik een three-stage least squares (3SLS) groeimodel (studie 1), en een Cox proportional hazards overlevingsmodel (studie 2). Voor studie 3 gebruik ik een gesimuleerde maximum likelihood schatting op basis van Metropolis-Hastings algoritmes, dat zijn Markov Chain Monte Carlo methodes, om een Bayesiaans hazard model te schatten. Een andere belangrijke methodologische bijdrage omvat de ontwikkeling van een tijdsafhankelijk, continu, en indirect meetinstrument in studie 1 om de verwantschap tussen productmarkten te meten wat kan dienen om diversificatiebeslissingen nauwer in verband te brengen met onderliggende processen van productiefactoren binnen een dynamische competentie. Ook ontwikkel ik in studie 3 een realistisch en flexibel hazard model dat rekening houdt met een eventueel niet-monotone event rate, een mogelijk permanente fractie van de populatie dat overleeft, en potentieel asymmetrische spillover effecten.

Met dit proefschrift maak ik een aantal belangrijke theoretische en praktische management bijdragen. Studie 1 geeft een theoretische en empirische onderbouwing voor een verband tussen diversificatie binnen een industrie en bedrijfs groei. Ook draagt studie 1 bij tot de dynamische competentie literatuur door het empirisch identificeren van een paradox die plaatsvindt bij het uitoefenen van een dynamische competentie. Bovendien draagt dit proefschrift bij tot de resource-based theorie door het verder verkennen en ontwikkelen van het verband tussen productiefactoren en producten van een bedrijf. De managementpraktijk kan gebruik maken van de inzichten over hoe bedrijven kunnen groeien door diversificatie en het op de hoogte zijn van de negatieve, interne wrijvingen op verschillende niveaus in de organisatie bij het uitoefenen van een dynamische competentie. Studie 2 draagt bij tot de literatuur over bedrijfsmodellen, bedrijfsmodelinnovatie, en introducties op de markt door te focussen op hoe ventures met succes een bedrijfsmodel kunnen lanceren in een bestaande industrie en door te erkennen dat een bedrijfsmodel een andere eenheid van analyse is dat verschilt van product, technologie, bedrijf of industrie. Het spoort aan tot verder onderzoek over de manier waarop bedrijfsmodelinnovatie anders is dan andere vormen van innovatie. Bovendien stelt studie 2 managers, ondernemers, en overheden beter in staat succes en falen bij nieuwe, 'verstorende' marktniches gerelateerd aan bedrijfsmodelinnovatie, te voorspellen. Studie 3 draagt bij tot de literatuur van marktintroducties, marktscanning en- signalering door te laten zien welke informatie effectief (in plaats van potentieel) de beslissing tot marktintroductie bij een bedrijf kan beïnvloeden, rekening houdend met signalen van geografische omgevingen waarin het bedrijf zowel actief als niet actief is. Bovendien ontdek ik bedrijfs- en marktenmerken die de signaalsterkte beïnvloeden en ik modelleer ook de invloed van signalen op bedrijfsgedrag meer realistisch, rekening houdend met de kenmerken van signaalzenders en- ontvangers. Mijn onderzoek informeert managers omtrent een beter scanningssysteem om alle relevante informatiesignalen, zowel sterke als zwakke, vast te leggen zonder een overdaad aan data nodig te hebben.

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Introduction

Strategic industry factors and diversification

Strategic industry factors are a set of resources and capabilities that have become the prime determinants of firm performance in an industry. They are industry-specific, subject to ex-ante uncertainty, and developed at industry level through complex interactions among various stakeholders (e.g., competitors, suppliers, and customers) and environmental factors (e.g., technology and regulation). Strategic industry factors can be referred to as factors driving competition in an industry (Ghemawat 1991). Examples of strategic industry factors could include brand equity, technological capability, control of distribution channels, buyer-seller relationships, etc. Strategic industry factors are also the prime determinants of firm performance. Firm performance is determined by the overlap between a firm's resources and capabilities, and the strategic industry factors (Amit and Schoemaker 1993). Thereby, it is important to not only appreciate the value of possessing a particular resource or capability (Barney 1991), but also the value of complementarities among resources and capabilities when configuring a bundle of resources and capabilities at the firm level (Milgrom and Roberts 1990; 1995; Rumelt 1984).

Determining firm performance based on the overlap between a firm's resource bundle¹ and what is needed to compete in its product market(s) draws back to the close interconnectedness between resources and products. When offering a product, a firm makes use of the services of particular resources in its resource bundle. To realize economic value, resources need to be productively linked with particular products that are sold in the market. The correspondence between a firm's resource bundle and its product market(s) implies that, given a product that a firm offers, one can infer the existence of the corresponding resources within the firm needed to offer that product (Lee 2008). It is said that a firm's resource bundle and product market portfolio are two sides of the same coin (Wernerfelt 1984). However, there is a distinction between resources and the services they can provide (Penrose 1959). Resources are not product-specific which means that they can be relevant for various product markets (Danneels 2007; Penrose 1959; Prahalad and Hamel 1990; Teece 1982). Therefore, if two product markets are related, the underlying resources are likely to overlap, even though one may not pinpoint exactly what the overlapping resources are (Lee 2008). Based on this close link between products and resources, I use product market relatedness to identify resource-based view (RBV)-related arguments on how product market diversification influences firm growth.

Previous research shows that dynamic capabilities are relevant in explaining product market diversification (e.g., Danneels 2007; 2011). When entering a product market, a firm needs to underpin its offering in that market with a reconfigured resource bundle consisting of both newly created resources that are specialized towards that product market and existing resources that are leveraged across different product markets (Helfat and Lieberman 2002). The concept of a firm's dynamic capability helps translating the idea of developing an appropriate resource bundle to be competitive with respect to an industry's strategic factors to the firm level. It is in line with the RBV

¹ For ease of expression I consider in what follows a firm's resource bundle as all assets, resources, and capabilities that firm owns or has access to.

that relates a firm's competitive advantage primarily to its resources and capabilities it possesses (e.g., Barney 1991; Peteraf 1993). However, a dynamic capability stresses the importance of changing a firm's resource bundle to build a competitive advantage and especially sustain it over the long term. A resource bundle consists of assets, resources, and capabilities that a firm can deploy to offer products in its product market(s). A dynamic capability is a firm's capability to change its resource bundle purposefully (Helfat et al. 2007). Like other capabilities, a dynamic capability is a complex bundle of skills and accumulated knowledge, exercised through organizational processes that enables a firm to coordinate activities and make use of its assets (Day 1994). Unlike other capabilities, its purpose is to actually alter a firm's resource bundle (e.g., Danneels 2011; Eisenhardt and Martin 2000; Helfat et al. 2007; Teece 2007). For example, a dynamic capability can be deployed to create new resources, leverage existing resources, and (re)configure them in the firm's resource bundle. Possessing a dynamic capability does not necessarily imply enhanced performance (Eisenhardt and Martin 2000; Helfat et al. 2007; Zahra, Sapienza, and Davidsson 2006). A dynamic capability only implies that the firm is intentionally doing something differently, but not necessarily better, than before. For example, the use of a dynamic capability when based on incorrect cause-effect assumptions may harm rather than help performance outcomes (Zahra et al. 2006).

How can firms deploy dynamic capability to grow when diversifying?

Although there is a large number of studies on firms' dynamic capability and the link between the RBV and diversification, I target some important gaps that limit our understanding of how firms can actually deploy dynamic capability to grow when diversifying. First, there is a large body of literature on diversification, but it mainly focuses on diversification across industries and it has difficulties showing a clear link between diversification and performance (For a review, see, e.g., Hoskisson and Hitt 1990; Palich, Cardinal, and Miller 2000). Second, the RBV is prominently used to explain diversification, its antecedents and its outcomes (Lockett and Thompson 2001; Wan et al. 2011). However, fine-grained measures of relatedness that closely link diversification with underlying arguments of the RBV are missing in the literature. Moreover, previous work lacks an adequate approach to deal with the endogeneity between resources and relatedness in the relationship between diversification and performance. Also, resources are bundled within firms. Linking resources with firm performance without taking into account the bundled nature of resources at firm level leads to potentially biased results. Third, the theory on dynamic capability suggests an influence of dynamic capability on firm performance, but a widespread call for empirical research whether and how dynamic capability is related to firm performance is still open (Barreto 2010; Helfat et al. 2007; Hoopes and Madsen 2008). Fourth, despite increasing attention for the internal processes related to deploying a dynamic capability, i.e., its so-called microfoundations (Eisenhardt, Furr, and Bingham 2010; Teece 2007), there is little empirical research to date on the internal processes of dynamic capability that goes beyond case studies (Danneels 2011).

Study 1, "Growth Implications of Within-Industry Diversification: A Paradox Between Resource Creation and Leverage", is an empirical study of the growth implications of dynamic capability deployment in the context of within-industry diversification. I closely link and explain diversification with concepts from both the RBV and the dynamic capability literature. To adequately link within-industry diversification to firm growth, I focus on both diversification level and diversification activity. Diversification level relates more to a 'static' condition. Therefore, I link it with a 'static' RBV

concept, i.e., resource fit. Diversification activity relates more to a ‘dynamic’ process. Therefore, I link it with ‘dynamic’ concepts related to a dynamic capability, i.e., resource creation and resource leverage. I posit that a firm’s dynamic capability can positively influence growth by creating new resources and configuring a firm’s resource bundle to have resource fit, but that there is a paradox at the core of a firm’s dynamic capability. Striving for both resource creation and resource leverage is needed for growth, but I argue they also have a negative reciprocity between each other, which has negative, indirect growth effects. This negative reciprocity stems from the contradicting focus and effect of resource creation and resource leverage. On the one hand, resource leverage focuses on exploiting existing resources, creating efficiencies among existing resources, and building more co-specialization and linkages among resources. That stimulates structure and inertia among resources which hurts a firm’s ability to create new resources. On the other hand, resource creation focuses on exploring new resources that also need integration with other, existing resources. That demands flexibility among resources to (temporarily) de-link existing, co-specialized resources which hurts a firm’s ability to leverage resources. Also, I try to empirically identify an important, new dimension of diversification beyond a firm’s control that can increase growth, i.e., market structuration. In study 1, I measure the relative importance of resource creation, resource leverage, resource fit, and market structuration on growth performance together with a simultaneous reciprocity between resource creation and leverage.

Strategic industry factor innovation

Industry stakeholders, environmental factors, and a firm’s own resources and capabilities can change over time (e.g., Porter 1991; Teece, Pisano, and Shuen 1997). So can strategic industry factors. I define ‘strategic industry factor innovation’ as an innovation introducing one or more new strategic industry factors, or a new combination of strategic industry factors. A new strategic industry factor can be a ‘known’ or an ‘unknown’ resource or capability. The distinctive character of a strategic industry factor innovation is the change in the set of prime determinants of firm performance and not the ‘novelty’ character of the resources or capabilities introduced. Business model innovation is an example of strategic industry factor innovation that stresses the innovative character of a new combination of often existing resources and capabilities, rather than coming up with completely new resources and capabilities as such.

How to successfully launch a business model?

A business model defines how a focal firm creates value for customers and how that value is appropriated across itself and its partners (Day 2011; Sorescu et al. 2011; Teece 2010). A business model can be represented by a system of interconnected and interdependent activities that transcends the focal firm (Zott and Amit 2010). Business models can be a potential source of competitive advantage (Casadesus-Masanell and Ricart 2010; Markides and Charitou 2004; Zott and Amit 2007; 2008). The business model is a major focal point of innovation (e.g., Casadesus-Masanell and Zhu 2013; Economist Intelligence Unit 2005; Hamel 2000; IBM Global Business Services 2012; Kim and Mauborgne 1997; Markides 1997; Mitchell and Coles 2003; Slywotzky 1996; Teece 2010). One can innovate the existing business model by adding novel or deleting standard activities, by linking or sequencing activities in novel ways, or by changing one or more parties that perform any of the activities (Amit and Zott 2012). To qualify as a business model innovation, the new business model should materially alter the value creation and appropriation logic, and it should be a new-to-

the-world business model that is reflected in new content, structure, governance, and/or value driver combinations of the activity system (Sorescu et al. 2011).

Despite its prevalence in both popular press and academia, there is a very important gap in the literature on business models that I want to address in this dissertation, i.e., that there is no empirical or theoretical guidance in the literature on how ventures can successfully launch a business model. Business models and their innovation are on top of the executive priority list as they hold great promise for differentiation and performance benefits. Many business model innovations, e.g., Netflix, Zara, and Southwest Airlines amongst others, are featured and praised for their success. Also, for every innovator with a new business model, there are often copycats launching the same business model in a particular geographic market. However, there are often large differences in success across market launches of the same business model. In **study 2,” Success Drivers of Launching a Business Model “**, I identify four market entry decisions, i.e., entry timing, product adaptation, scale of entry, and strategic control, that may influence the business model’s value drivers and ability to create and capture value. I hypothesize main and interaction effects on how these entry decisions impact the survival of the launched business model. Thereby I argue it is important to treat the business model as a separate unit of analysis, different from industry, firm, product, or technology. Moreover, I posit there are not only differences but also an interplay between the business model and a product market strategy, which can hold important consequences for the market entry literature.

Drivers of incumbent launch timing

Innovative business models creating new market niches in an industry pose significant threats for incumbents. Deciding when to enter such a new market niche is far from easy for incumbents. Entry timing can have important short- and long-term performance implications (Gielens and Dekimpe 2001; Green, Barclay, and Ryans 1995). Moreover, in study 2 of my dissertation I argue there are important main and interaction effects of entry timing on a business model’s launch success. However, incumbents face severe financial and managerial risks related to a lack of information on the new market niche. Therefore, firms need to adequately scan their environment to actively search and especially structure information to prepare, guide and defend their decisions. Environmental scanning is the means through which managers perceive external events and trends (Culnan 1983; Hambrick 1982). It has the task of reducing perceived strategic uncertainty (Daft, Sormunen, and Parks 1988). Various literature streams suggest that environmental scanning is important for firms to create and sustain a competitive advantage. Previous research on market orientation (e.g., Hult, Ketchen, and Slater 2005; Kohli and Jaworski 1990), absorptive capacity (Cohen and Levinthal 1990), dynamic capabilities (Teece 2007), and organizational vigilance (Day and Schoemaker 2006; Fiol and O'Connor 2003; Levinthal and Rerup 2006) all suggest that firms should actively scan their environment to identify, anticipate, and respond adequately to market opportunities or threats. Also, scanning can provide a firm with an information advantage based on the firm’s ability to perceive important signals in its environment before competitors do so (Dutton and Freedman 1984). Moreover, scanning is also gaining importance because there are more and more situations where there are problems of data overload and accelerated market complexity (Day 2011).

Previous research on scanning focuses on developing and managing an adequate scanning system, describing scanning activities based on scanning mode, frequency, scope, and top management involvement, and studying the alignment between environmental characteristics and a firm's scanning system design (e.g., Aaker 1983; Aguilar 1967; Culnan 1983; Daft, Sormunen, and Parks 1988; Elenkov 1997; Hambrick 1982; Hambrick and Mason 1984; Yasai-Ardekani and Nystrom 1996). However, there are two important remaining gaps in the literature that make it difficult for firms to adequately scan their environment, especially when the information is geographically dispersed and firms lack time and money to conduct extensive scanning activities. First, previous research on scanning seems to assume that the relevant environmental boundaries coincide with the product-geographic scope of the firm (Yasai-Ardekani and Nystrom 1996) or with the perceived impact of events on a firm's own performance (Aaker 1983; Daft, Sormunen, and Parks 1988; Pfeffer and Salancik 1978). However, with increasingly global competition and blurring industry boundaries, the relevant geographic environment to scan might be much broader than what initially is expected. Second, whereas previous research focuses on listing all possible information sources and stressing the importance of applying a broad scanning scope with high frequency when uncertainty is high, little is known on what information sources are actually influencing firms' decisions. Consequently, previous research provides little help for firms how to grasp what information signals in its environment are most relevant, especially when these firms have limited resources but ever increasing data dispersion and complexity.

In **study 3, "Learning and Signals Across Firms and Markets: Identifying Entry Spillover Types and Moderators"**, I study what information signals actually influence a focal industry incumbent's decision when to enter a new market niche and how these signals influence that decision, while taking into account signals from both served and non-served geographic environments. I focus on information signals related to previous market niche entries. I define entry spillover as signals related to a previous market niche entry by a particular firm in a particular market that influence the focal firm's entry decision for that market niche in a focal market. Scanning here involves gathering and monitoring information on previous market niche entries. A market niche entry is done by a particular firm in a particular market. Therefore, I can relate information signals from previous market niche entries to both firms and markets, and their respective characteristics.

Types of entry spillover

I suggest there are three different types of entry spillover based on the two main information dimensions firms relate to a market niche entry, i.e., information tied to the entering firm and information tied to the market. Previous research suggests there are entry spillovers that take place within firms across markets, and entry spillovers that take place across firms within markets. Firms can search within their firm boundaries for information and own experiences with the new market niche in other markets (e.g., Mitra and Golder 2002). The theory on multinational enterprises specifically states that firms active in multiple markets build one organization in order to transfer knowledge more efficiently across markets (Kogut and Zander 1993; 2003). Also, firms look at competitors' entries as signals of market attractiveness to guide a focal market entry decision (Bowman and Gatignon 1995; Gielens and Dekimpe 2007; King and Tucci 2002). It appears there is social pressure for a firm's decision-makers to conform to imitation behavior (Abrahamson 1991; Aldrich and Fiol 1994; Fiol and O'Connor 2003).

However, based on theoretical and empirical observations, I argue there is also a third type of entry spillover, i.e., across firms across markets. First, organizational theory establishes that firms learn from own experiences and other firms' experiences (Levitt and March 1988). It has been suggested that the ability of firms to learn from each other is not noticeably restricted by national markets (Baldwin and Krugman 1988), i.e., that international inter-organizational learning networks might exist (Tregaskis 2003). Second, firms become increasingly internationally active in multiple markets. Therefore, incumbents should anticipate market entries by firms that are yet unknown, and start monitoring them. Also, higher international presence implies that competitors are finding themselves more and more in overlapping markets (Gielens, Helsen, and Dekimpe 2012). The higher the number of overlapping markets between competitors, the more multimarket competition and the more competitive effects across markets can occur. Whether multimarket contact leads to more (Porter 1980), less (Bernheim and Whinston 1990; Feinberg 1985), or more strategic competition (Kang, Bayus, and Balasubramanian 2010), all outcomes imply that firms monitor multimarket competitors more than other competitors.

Moderators of entry spillover

When firms scan previous market niche entries, they need to structure all these information signals to capture the essence. I argue that firms focus on information signals from particular firms in particular markets more than from other firms or markets. It implies that entry spillover is heterogeneously distributed across firms and markets. Previous research indicates that entry spillover can differ in strength. For example, firms can transfer knowledge more easily across similar markets (e.g., Gielens and Dekimpe 2007; Mitra and Golder 2002) and firms are more inclined to imitate similar firms (e.g., Debruyne and Reibstein 2005). However, I argue there can be other dimensions than similarity that moderate entry spillover. Based on signaling theory, spillover strength could differ also depending on characteristics of the sender and the receiver of the information signal. It implies that other firm and market characteristics could simultaneously influence entry spillover and that entry spillover is asymmetric. Asymmetric spillover means that entries by firm F1 (in market M1) can have more or less influence on entries by firm F2 (in market M2), than that entries by firm F2 (in market M2) have on entries by firm F1 (in market M1).

To structure entry spillover's heterogeneity and asymmetry, I split a spillover process in three main dimensions. For every spillover, there is a source, a receiver, and a distance to overcome. The source firm is the firm that enters the new market niche previous to a focal firm's decision and the source market is the market in which that source firm enters that new market niche. The receiver firm is the focal firm and the receiver market is the market in which the focal firm might enter the new market niche. The distance to overcome is the physical or 'mental' distance between source and receiver firm, or between source and receiver market. The spillover dimension related to the source is 'sphere of influence' of the source towards potential receivers. Sphere of influence embodies how well senders of information are able to capture the attention of potential receivers with respect to the information that is conveyed. The spillover dimension related to the receiver is 'receptivity' of the receiver towards external information. Receptivity embodies how well potential receivers of information are able or open to capturing information. The spillover dimension related to distance to overcome is the 'proximity' between senders and receivers. I posit that sphere of influence, proximity and receptivity amplify the entry spillover effect of previous entries on a focal

incumbent's time to enter the new market niche. I identify several firm characteristics that influence firms' proximity, sphere of influence, or receptivity. Similarly, I identify several market characteristics that influence markets' proximity, sphere of influence, and receptivity.

Research design and methodology

The overall framework of this dissertation is depicted in figure 1. I applied the following methodology for the different research projects. In study 1, I study growth implications of product market diversification within a single industry. I develop a time-varying, continuous, and indirect measure of product market relatedness which allows to link diversification decisions with underlying resource-based mechanisms when deploying dynamic capability. I focus on the service industry and collect data on Belgian, Dutch and U.K. market research agencies for the period 1990-2005. I track their presence across 33 product markets and estimate a system of three equations of respectively firm growth, resource creation, and resource leverage. I use a three-stage least squares (3SLS) estimation approach, while accounting for simultaneity, endogeneity, and firm-level unobserved heterogeneity. I also apply a selection correction mechanism for non-survival. The estimation approach allows to estimate growth implications of diversification while controlling for the simultaneity of decision-making with respect to resource creation and resource leverage. Moreover, it allows to model causal relationships between the variables of interest and firm growth. Also, I can develop unbiased parameter estimates in the presence of endogeneity. Given the focus on a single industry I have no cross-industry noise coming from differing industry-specific shocks to supply and demand. Also, the data represent a diverse, complete picture of the market research industry by including big, multinational firms and small and medium-sized enterprises (SMEs), as well as start-ups and older firms.

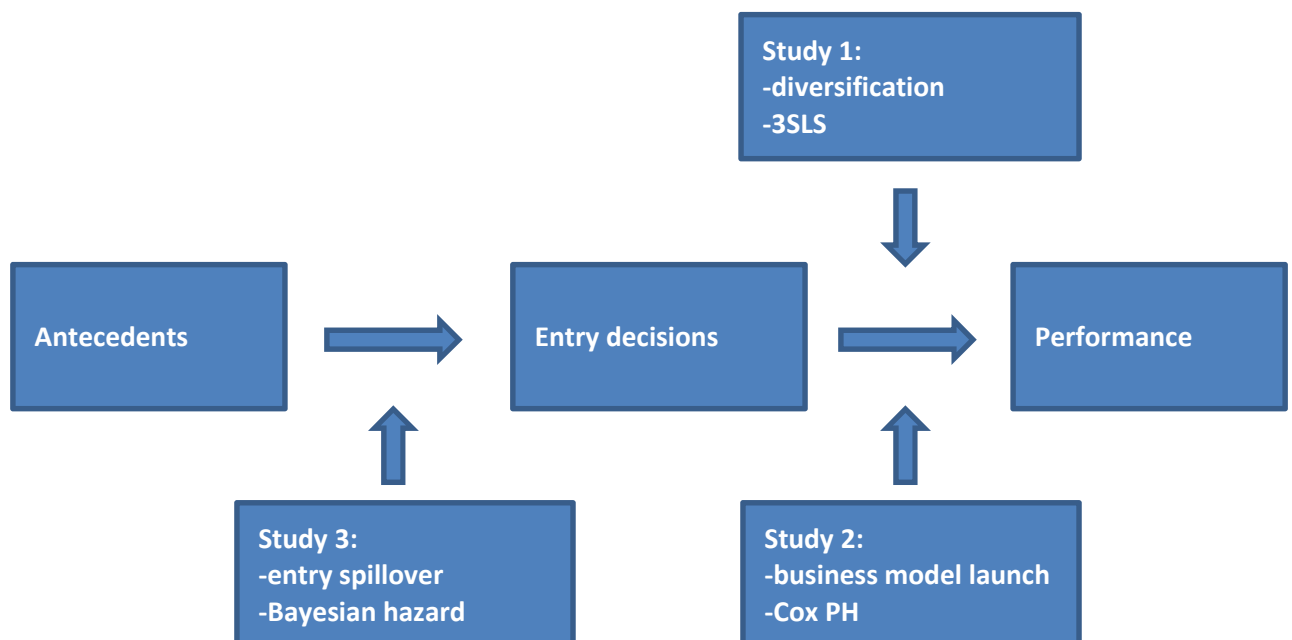


Figure 1: research design

In study 2 I study success drivers of a business model launch. Therefore, I model market entry decisions' influence on a venture's survival after its business model launch. I estimate the model

using the Cox Proportional Hazards method. The context involves the free daily newspaper business model innovation that appeared in the existing paid daily newspaper industry. This new business model allows customers to take the daily newspaper for free instead of paying a subscription or per-issue fee. Ad revenues are the only revenue stream for the publisher. The free daily newspaper is mainly distributed in high-traffic commuter zones and in public transportation systems, e.g., through self-service racks or by hand distributors in railway, subway and bus stations. Its target customers are daily commuters using public transportation. I sampled 29 countries across Europe and Canada where free daily newspapers have been introduced between 1995 and 2010. Across these countries, I identified a census of 155 free daily newspaper ventures. I collected and analysed longitudinal data on these free daily newspaper ventures' launch and survival, market entry decisions, and venture and market characteristics. Data sources include websites, newspaper articles, industry organization secondary databases, and industry expert interviews.

In study 3, I model market entry spillover types and moderators that influence an incumbent's entry timing in a new market niche created by business model innovation. I model when incumbents enter a new market niche based on previous market niche entries, i.e., market entry spillover. Also, I include firm and market characteristics as moderators of entry spillover across firms respectively markets. I develop a Bayesian hazard model that accounts for a possibly non-monotonic event rate, a permanent survivor fraction, and potentially asymmetric spillover effects. I estimate the model using a flexible Markov Chain Monte Carlo (MCMC) method known as the Metropolis-Hastings (MH) algorithm. This algorithm allows to generate samples from the posterior distribution without the form of the posterior density being known analytically. The context is similar to study 2, but the sample now involves incumbent publishers of paid daily newspapers that are confronted with the new market niche, i.e., the free daily commuter newspaper market (e.g., *Metro*, *20 Minutes*). I collected data on 163 incumbent newspaper publishers in 14 European markets for the period 1995-2010. The unit of analysis is the incumbent publisher-market combination.

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Study 1 Growth Implications of Within-Industry

Diversification: A Paradox between Resource Creation and Leverage

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1.1 Abstract

Firm growth is a key concern of managers and investors. We investigate the growth implications of a firm's within-industry product diversification level and activity. Therefore, we closely link diversification with concepts from both the resource-based view and the dynamic capability literature. We argue and show that a firm's dynamic capability can positively influence growth by creating new resources and configuring a firm's resource bundle to have resource fit. However, we find a paradox that is at the core of a firm's dynamic capability. Striving for both resource creation and resource leverage is needed for growth, but they also have a negative reciprocity between each other, which has negative, indirect growth effects. Also, we empirically identify an important, new dimension of diversification beyond a firm's control that increases growth, i.e., market structuration. We measure the relative importance of resource creation, resource leverage, resource fit, and market structuration for growth performance together with a simultaneous reciprocity between resource creation and leverage. We analyse longitudinal data on the presence of market research firms in various product markets in three countries and use three-stage least squares estimation while accounting for endogeneity, simultaneity and selection bias. We discuss important theoretical, methodological and managerial contributions.

Key words: 3SLS, within-industry diversification, dynamic capabilities, growth, RBV

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1.2 Introduction

Firm growth is a central topic in strategy research and a key managerial concern. Companies that grow slower than GDP are five times less likely to survive the next business cycle compared to firms that grow faster than GDP (Baghai, Smit, and Viguerie 2007). Also, investors pay premiums for high-growth firms. However, achieving consistent growth is extremely hard. For example, recent research indicates that among big firms, only 4% out of nearly 5,000 achieve a net income growth of at least 5% for five consecutive years (McGrath 2012).

An important growth strategy for firms is to diversify across product markets. However, we identify some important theoretical and methodological gaps in the literature that lead to potentially biased results when estimating growth implications of diversification. First, there is a large body of literature on diversification, but it mainly focuses on diversification across industries and it has difficulties showing a clear link between diversification and performance (For a review, see, e.g., Hoskisson and Hitt 1990; Palich, Cardinal, and Miller 2000). Because industry relatedness is based on SIC categories that are sometimes randomly delineated and industrial conglomerates often operate through holding structures with separate entities per industry, studies taking a cross-industry approach often fail to capture the true resource drivers of relatedness and diversification. Also, although any growth measure is based on both the level and change in the growth subject, studies on diversification's growth implications often fail to include both diversification level and diversification activity to explain growth performance. Second, the resource-based theory is prominently used to explain diversification, its antecedents and its outcomes (Lockett and Thompson 2001; Wan et al. 2011). However, fine-grained measures of relatedness that closely link diversification with underlying arguments of the resource-based view (RBV) are missing in the literature. Moreover, previous work lacks an adequate approach to deal with the endogeneity between resources and relatedness in the relationship between diversification and performance. Also, resources are bundled within firms. Linking resources with firm performance without taking into account the bundled nature of resources at firm level leads to potentially biased results.

The following research questions are remaining. First, does within-industry product diversification lead to growth? Second, what is the relative influence of diversification activity compared to level of diversification on firm growth? Third, what are the underlying resource mechanisms of diversification that lead to growth? To address these gaps and subsequent research questions, we explain growth implications of product market diversification by focusing on a single industry, by relating both diversification level and diversification activity to growth while applying underlying theoretical arguments of the RBV and dynamic capabilities literature, and by developing a fine-grained relatedness measure in line with the close relationship between resources and product market relatedness.

First, we focus on within-industry product diversification. Recently, there is more attention for within-industry diversification in which firms enter different market niches within a single industry (e.g., Stern and Henderson 2004; Tanriverdi and Lee 2008). In this study, we define a market niche as a product market. Although there can be important differences between within-and across-industry diversification (Li and Greenwood 2004), staying within the boundaries of one industry can alleviate some of the previously mentioned problems when studying performance implications of diversification. Compared to defining industry boundaries based on SIC categories, focusing on a

single industry enables us to define market niche boundaries more appropriately based on business activities and industry-driven market structuration. This leads to a relatedness measure that can capture underlying resource logic better. Also, when diversifying across industries, a prevalent organizational structure is the holding unit with a set of -- often loosely -- coupled firms that are active each in a different industry. In such a structure, it is hard to imagine having one, well-integrated resource bundle shared across industries. A single industry is a more meaningful context in which one, well-integrated resource bundle can reside in a single firm. Therefore, a single industry is better able to take a holistic approach focused on resource bundles instead of individual resources.

Second, we relate diversification level and diversification activity to growth with the help of underlying theoretical arguments of the RBV respectively dynamic capabilities literature. Whereas the RBV literature is more static and thus more suitable to explain growth implications of a firm's level of diversification, we argue it is key to understand how dynamic capabilities work to understand how a firm's diversification activity can lead to growth. A dynamic capability is a firm's capability to create, leverage, and configure elements of its resource bundle purposefully without necessarily implying enhanced performance (Helfat et al. 2007). A firm's resource bundle consists of its assets, resources, and capabilities. Previous research shows that dynamic capabilities are relevant in explaining product diversification (e.g., Danneels 2007; 2011). When entering a product market, a firm needs to underpin its offering in that market with a reconfigured resource bundle consisting of both newly created resources that are specialized towards that product market and existing resources that are leveraged across different product markets (Helfat and Lieberman 2002).

We posit that both resource creation and resource leverage can lead to growth. However, the key to understanding the role of a dynamic capability towards growth is that there lies a paradox in striving for both resource creation and resource leverage. This paradox stems from the contradicting focus and effect of resource creation and resource leverage. On the one hand, resource leverage focuses on exploiting existing resources, creating efficiencies among existing resources, and building more co-specialization and linkages among resources. That stimulates structure and inertia among resources which hurts a firm's ability to create new resources. On the other hand, resource creation focuses on exploring new resources that also need integration with other, existing resources. That demands flexibility among resources to (temporarily) de-link existing, co-specialized resources which hurts a firm's ability to leverage resources. More resource creation is likely to hurt resource leverage and vice versa. But firms seem to need both and have to decide on both simultaneously when diversifying.

In a similar vein, previous research states that firms need to balance exploitation of existing resources and continuous development of new resource positions in order to obtain optimal growth (Pettus 2001; Teece et al. 1997). But in diverse literature streams, it is suggested that creation decreases leverage and leverage makes creation more difficult. See for example previously studied tensions between efficiency and flexibility (Adler, Goldoftas, and Levine 1999; McKee, Varadarajan, and Pride 1989), organizational change and activity system fit (Siggelkow 2001), architectural innovation and product component fit (Henderson and Clark 1990), and firm adaptation and organizational element fit (Levinthal 1997).

Third, we develop a fine-grained relatedness measure in line with the close relationship between resources and product market relatedness. We build a time-varying, continuous, and indirect measure of product market relatedness. A time-varying relatedness measure is important to capture the dynamics of an industry (Tanriverdi and Lee 2008) and changes in diversification over time (Ramanujam and Varadarajan 1989). Also, within-industry diversification is assumed to be related, so within-industry relatedness embodies the degree of relatedness which is best measured continuously (Li and Greenwood 2004). Moreover, an indirect measure has the advantage it increases external validity (Bryce and Winter 2009).

A key feature of our product market relatedness measure is that it is based on the joint occurrences of different product markets in firms' product market portfolios. Aggregating joint occurrences of product markets across firms within an industry indicates how related those product markets are. It also corresponds to how similar those product markets are in their need for particular resources and how relevant a firm's resource bundle is to underpin those product markets (Lee 2008). When offering a product, a firm makes use of the services of particular resources in its resource bundle. To realize economic value, resources need to be productively linked with particular products that are sold in the market. The correspondence between a firm's resource bundle and its product markets implies that, given a product that a firm offers, one can infer the existence of the corresponding resources within the firm needed to offer that product. It is said that a firm's resource bundle and product market portfolio are two sides of the same coin (Wernerfelt 1984). However, there is a distinction between resources and the services they can provide (Penrose 1959). Resources are not product-specific which means that they can be relevant for various product markets (Danneels 2007; Penrose 1959; Prahalad and Hamel 1990; Teece 1982). Therefore, if two product markets are related, the underlying resources are likely to overlap, even though one may not pinpoint exactly what the overlapping resources are (Lee 2008). Based on this close link between products and resources, we use product market relatedness to identify RBV-related arguments on how product market diversification influences firm growth.

We apply the following methodology. We estimate a system of three equations of respectively firm growth, resource creation, and resource leverage. We use a three-stage least squares (3SLS) estimation approach. We account for simultaneity, endogeneity, and firm-level unobserved heterogeneity. We also apply a selection correction mechanism for non-survival. Our estimation approach has several advantages. It allows us to estimate growth implications of diversification while controlling for the simultaneity of decision-making with respect to resource creation and resource leverage. Moreover, it lets us model causal relationships between our variables of interest and firm growth. Also, we can develop unbiased parameter estimates in the presence of endogeneity.

We collect data on Belgian, Dutch and U.K. market research agencies for the period 1990-2005. We track their presence across 33 product markets. Our sample and industry context are appropriate for several reasons. First, the data stem from a mature service industry for which we capture a large number of product market entries. Given our focus on a single industry we have no cross-industry noise coming from differing industry-specific shocks to supply and demand. Second, our data set spans 16 years of data in which there are both turbulent and stable periods. Environmental changes include the introduction of internet research and online research methods

around 1995, and the start of a global recession and a wave of mergers and acquisitions in the industry around 2000. We control for these changes by introducing fixed time effects and a dummy indicating whether a firm is involved in a merger or acquisition. Third, our data set is a mix of big, multinational firms and SMEs as well as start-ups and older firms. That way our data set presents a diverse, complete picture of the market research industry. We control for firm size and age.

With this study, we offer important theoretical and methodological contributions. First, we contribute to the diversification literature. We provide theoretical and empirical argumentation for a link between within-industry diversification and growth performance. Also, we show the importance of an adequate relatedness measure that needs to link aspects of diversification with underlying theoretical logic to explain the outcomes of diversification. We show how an indirect method based on a firm's product market portfolio can be applied to measure product market relatedness that reveals information on a firm's resource bundle. Moreover, we not only include firms' diversification level, but also firms' diversification activity. Prior research on diversification focuses on firms' presence across markets, i.e., diversification level, based on decisions taken before the period in which growth performance is appraised. Our study incorporates both static and dynamic aspects of diversification and is therefore better suited to link diversification to growth performance. Second, we contribute to the dynamic capabilities literature. We identify a core paradox that is taking place when deploying a dynamic capability, i.e., a paradox between creating and leveraging resources. Previous research suggests a dynamic capability involves finding a balance between two opposing forces (Eisenhardt, Furr, and Bingham 2010; Helfat et al. 2007). We build further on that by explaining a paradox between two resource altering activities that form the core of a dynamic capability. We explain the paradox in terms of processes and in terms of managerial mental activity. Also, we contribute by making decisions with an impact on resources and dynamic capabilities more tangible and measurable. Moreover, our main findings help identify how a dynamic capability can lead to growth and what the possible pitfalls are. Third, we contribute to the resource-based theory. In line with previous work by Wernerfelt (1984) and Lee (2008), we further explore and develop the link between a firm's resources and products. We add to the relevance of the resource-based theory for explaining diversification and firm growth. We also make measuring a firm's resource bundle more tangible.

This study also offers managerial contributions. First, we provide insights on how to grow in a relatively 'safe' within-industry environment. Thereby, we focus on the importance of dynamic capabilities and describe the resource trade-offs firms have to make. We show that managers can capture growth opportunities through diversification and a dynamic capability, but that managers should be aware of the dynamic capability's negative internal effects. Our study helps managers identifying possible causes for these negative effects in the form of different constraints at different levels within the organization. Second, this study and its outcomes are informative for multiple organizational functions, i.e., functions related to product portfolio management, resource and process management, and top management decision-making. Third, our methodology used is easily replicable, also across industries. It provides firms with an actionable method to benefit from diversification. Also, we provide a convenient method for managers to build active knowledge on how their product market portfolio is in congruence with their available resource bundle.

The paper is organized as follows. First, we focus on the conceptual background and develop appropriate hypotheses. Second, we describe our data set and variable operationalization. Third, we specify our model and estimation method. Fourth, we present our results, check for their robustness, and discuss our contributions. We conclude with some limitations and areas for further research.

1.3 Conceptual background and hypothesis development

1.3.1 Within-industry diversification

Within-industry diversification deals with firms entering different market niches within a single industry. Previous research considers market niches that refer to product lines (Stern and Henderson 2004) or product lines within particular geographic areas (Li and Greenwood 2004). In this study, we focus on diversification across product markets in a single industry within country borders. Previous research observes that within-industry diversification can contribute to performance in terms of product and organizational survival (Cottrell and Nault 2004; Stern and Henderson 2004), profitability (Li and Greenwood 2004), and sales growth and market share (Tanriverdi and Lee 2008). However, diversification per se does not lead to higher performance (Li and Greenwood 2004; Tanriverdi and Lee 2008).

Reasons for possible performance contributions of within-industry diversification mentioned are exploiting excess productive resource capacity, resource synergy creation in the form of economies of scope, mutual forbearance, and market structuration (Cottrell and Nault 2004; Davis and Thomas 1993; Farjoun 1994; Li and Greenwood 2004; Markides and Williamson 1994; Robins and Wiersema 1995; Stern and Henderson 2004; Tanriverdi and Lee 2008). The RBV is prominently used to explain diversification, its antecedents and its outcomes (Lockett and Thompson 2001; Wan et al. 2011). However, fine-grained measures of relatedness that closely link diversification with underlying arguments of the RBV are missing. Also, previous work lacks an adequate approach to deal with the endogeneity between resources and relatedness in the relationship between diversification and performance. Moreover, linking resources with firm performance without taking into account the bundled nature of resources at firm level leads to potentially biased results. There is increased attention to seeing resources in relation to other resources within configurations, instead of focusing on individual resources. This is in line with a general RBV idea of resource bundles (Rumelt 1984), and with concepts such as resource complementarities and co-specialization (Dierickx and Cool 1989; Teece 1986; Teece et al. 1997). More generally, it is in line with a renewed appeal of research on fit (Peteraf and Reed 2008; Porter and Siggelkow 2008; Zajac, Kraatz, and Bresser 2000).

Instead of focusing merely on the RBV, which is often denoted as ‘static’ (Priem and Butler 2001a; Priem and Butler 2001b), we also relate diversification with the literature on dynamic capabilities. There are two important reasons. First, to adequately link within-industry diversification to firm growth, we need to focus on both diversification level and diversification activity. On the one hand, diversification level relates more to a ‘static’ condition. Therefore, we link it with a ‘static’ RBV concept, i.e., resource fit. On the other hand, diversification activity relates more to a ‘dynamic’

process. Therefore, we link it with 'dynamic' concepts related to a dynamic capability, i.e., resource creation and resource leverage. Second, to capture empirically the underlying resource-based arguments of diversification, we need to identify what happens when changes occur in a firm's resource bundle when diversifying. Spurred by the dynamic capabilities literature, there is increasing attention for the internal dimensions of a firm's resource bundle and how it works. Previous research tries to disentangle dynamic capability and identifies different internal dimensions that might have different performance implications (Danneels 2011; Helfat et al. 2007; Sirmon et al. 2011; Teece 2007). Also, it has been suggested that possible tensions among internal dimensions are at the core of dynamic capability's performance potential (Eisenhardt et al. 2010). In our study we identify resource creation and resource leverage as two important dimensions of a dynamic capability, and argue we need to study their growth implications separately. However, we also suggest there is an internal paradox between resource creation and leverage based on constraints that have been studied in various domains such as learning, managerial capacity, and organizational structure.

1.3.2 Dynamic capability and growth

A dynamic capability is a firm's capability to change its resource bundle purposefully (Helfat et al. 2007). A firm's resource bundle is its set of assets, resources, and capabilities. Like other capabilities, a dynamic capability is a complex bundle of skills and accumulated knowledge, exercised through organizational processes that enables a firm to coordinate activities and make use of its assets (Day 1994). Unlike other capabilities, its purpose is to actually alter a firm's resource bundle (e.g., Danneels 2011; Eisenhardt and Martin 2000; Helfat et al. 2007; Teece 2007). For example, a dynamic capability can be deployed to create new resources, leverage existing resources, and (re)configure them in the firm's resource bundle. Possessing a dynamic capability does not necessarily imply enhanced performance (Eisenhardt and Martin 2000; Helfat et al. 2007; Zahra, Sapienza, and Davidsson 2006). A dynamic capability only implies that the firm is intentionally doing something differently, but not necessarily better, than before. For example, the use of a dynamic capability when based on incorrect cause-effect assumptions may harm rather than help performance outcomes (Zahra et al. 2006).

When diversifying across product markets, firms deploy a dynamic capability for two main purposes: resource creation and resource leverage. Resource creation allows firms to sense, seize or even shape opportunities, and to align with their external environment (Teece 2007). In line with evolutionary thinking, dynamic capability deals with creating appropriate resources to fully capture market opportunities in possibly changing environments. Performance then indicates how well a firm adapts to its environment by possessing resources that are valuable, rare, non-inimitable, non-substitutable, and appropriable (Barney 1991; Teece, Pisano, and Shuen 1997). Resources have been categorized into two types: market-related and technology-related (Mitchell 1992). When entering a product market, resource creation can refer to creating new technology-related resources and/or market-specific resources to underpin the firm's offering in that market and to enable the firm to capture the growth potential of the market (Danneels 2002; Teece 1986; Tripsas 1997). Examples of technology-related new-to-create resources include new production processes and new patents. Examples of market-related new-to-create resources include new customer relationships, brand-specific reputation, and knowledge of customer needs and preferences. When entering a market, a firm always has to create new resources, be it technology-related, or market-specific, or both. Two

product markets with exactly the same technology-related and market-specific characteristics would be the same product markets per definition.

We argue that creating resources increases firm growth in two ways. First, creating new resources when entering product markets increases a firm's potential and ability to capture previously untapped market opportunities. Also, growing a firm's resource bundle enhances its value, ambiguity, in-imitability, and appropriability which should lead to better performance (Barney 1991). When creating market-specific resources such as customer relationships, goodwill, and brand reputation, firms can access new customers with new or existing technology which increases firm growth (Danneels 2002; 2007). Similarly, when creating technology-related resources such as knowhow, patents, and production facilities, firms can build new products to offer to new or existing customers which increases firm growth. Second, creating new resources for newly entered product markets can increase firm value in important ways. It acts as important learning opportunity for firms because it increases flexibility through exploring new things and decreases the probability for competency traps (March 1991). Also, it creates valuable firm options for future deployment in newly entered product markets. It is said that a firm's value lies in its combinative potential of deploying new and existing resources in its resource bundle for innovation in existing markets or for addressing new markets (Kogut and Kulatilaka 2001). Therefore, we hypothesize the following.

H1a: Resource creation increases firm growth.

Next to creating new resources, a dynamic capability can also be deployed to leverage existing resources for new product markets. Leveraging existing resources when entering product markets means that firms can share and redeploy existing resources to offer and compete in both existing and newly entered product markets. For example, firms can sometimes redeploy marketing expertise, brands, and sales forces in multiple product markets (Capron and Hulland 1999). Also, customer knowledge can be shared and redeployed when understanding and serving multiple product needs of the same customer base (Farjoun 1998). It is said that resources that can be shared across different product markets are fungible (Danneels 2007; Mahoney and Pandian 1992; Penrose 1959; Teece 1982). When trying to leverage resources across different product markets, firms are focused on creating fit or alignment among technology-related and market-specific resources in their resource bundle. Firms also (re)configure their resource bundle to achieve (higher) fit among their resources which is expected to positively influence firm performance (Helfat et al. 2007; Sirmon, Hitt, Ireland, and Gilbert 2011; Teece 2007).

We argue that both resource leverage related to a firm's diversification activity in the focal time period, and the level of resource fit related to the level of a firm's diversification across product markets can enhance firm growth. Resource fit signifies the relevance of a firm's resource bundle to target and compete in the various product markets in its product market portfolio. Higher resource fit means a higher overlap among the resources needed for a firm's various product markets and thus refers to a higher relatedness among product markets in a firm's product market portfolio. Higher overlap indicates a firm possesses more of the resources that are important to offering particular products, and lacks less of the resources that are vital to offering its products. That increases its resource bundle's overall effectiveness. Higher overlap also indicates that a firm's resource bundle is more relevant for competing in its product markets. It means a firm's resources

are more helpful in underpinning its products and can be leveraged more often, and that the firm is less over-resourced with irrelevant resources.

We discuss three main advantages of higher resource fit that can add to firm growth. First, there is a learning advantage. Higher resource fit implies that firms can use similar or related technical, managerial or customer knowledge when targeting and competing in their markets. Building upon relevant and complete market knowledge, firms have to learn less and can learn faster when entering a new market. This learning advantage can lead firms to capture the growth potential associated with the new market faster and more effectively. For example, research on industry diversification shows resource and knowledge similarities between diversifiers' original and target industries (Farjoun 1994; Montgomery and Hariharan 1991). Diversifying entry is influenced by resource relatedness (Chatterjee and Wernerfelt 1991). Also, there is a positive relationship between resource relatedness and diversification performance (Kor and Leblebici 2005; Levinthal and Wu 2010). For example, research on international market entry suggests that the expected and actual performance of a firm in a new market can depend on learning advantages in the form of near-market knowledge and managerial experience in similar countries (Barkema, Bell, and Pennings 1996; Gielens and Dekimpe 2001; Gielens and Dekimpe 2007; Johnson and Tellis 2008; Mitra and Golder 2002). Another example is that when redeploying technological knowledge in new markets, serving customers in the newly entered markets is often different from serving existing customers (Danneels 2007). However, when the newly entered market is very similar to a firm's existing markets, customers can be similar to existing customers or existing customers can even be present in both new and existing markets. Firms are then able to redeploy existing customer relationships and customer knowledge.

Second, there is an efficiency advantage. Previous research shows that striving for fit can have measurable efficiency consequences (Peteraf and Reed 2007). We discuss two efficiency advantages from resource fit that can have implications for firm growth. First, possessing only relevant resources means that a firm is not over-resourced with irrelevant ones. Over-resourcing is unproductive and can even be counter-productive when resources hinder each other. Irrelevant resources decrease a firm's ability to capture growth opportunities fast. Irrelevant resources do not help firms competing in their markets. However, they add to a firm's cost base, and slow down identification and development of relevant resources, because they also demand time and efforts for development, maintenance, and/or divestment. Second, fungible resources that are relevant across several product markets can add to a firm's efficiency. Firms can often leverage existing, fungible resources across different markets. Resource leverage has been linked to growth (Helfat and Raubitschek 2000). Fully exploiting available resources' fungibility means that firms can capture growth opportunities faster because they do not have to create all resources needed to compete in a particular product market. Firms often diversify to utilize excess resource capacity and to benefit from economies of scope when the demand for the services from these input factors is limited and an efficient factor market is absent (Kor and Leblebici 2005; Penrose 1959; Rumelt 1982; Teece 1982). That way, firms capture efficiencies through exploiting available resources over a larger product market portfolio. It implies that firms capture all possible growth potential related to their existing resource bundle.

Third, there is a complementarity advantage. High resource fit implies having more complementary resources. If two resources are aligned and relevant to each other, they strengthen each other and are said to be complementary. The value of two complementary resources combined is more than the sum of their individual values (Milgrom and Roberts 1990; Milgrom and Roberts 1995). A higher combined value of a firm's resources refers to a higher effectiveness of the firm's resources in underpinning its market offering. A higher value of its resources can enlarge the size of the potential market and subsequently the firm's potential growth. Moreover, if a firm has a more complete set of complementary resources, especially market-related complementary resources, it is better equipped to appropriate the value it created (Teece 1986). Also, including more complementarities among resources increases the difficulty for competitors to imitate (Rivkin 2000). Resources' value, appropriability and in-imitability contribute to the firm's ability to capture growth opportunities.

We argued that both resource leverage which is related to diversification activity, and the level of resource fit which is related to diversification level can enhance firm growth. Therefore, we hypothesize the following.

H1b: Resource leverage increases firm growth.

H1c: Resource fit increases firm growth.

However, complementarities and fit can change over time. Previous research indicates that complementary relationships among a firm's resources or activities can change due to industry evolutions such as radical technological innovations, changing consumer trends, and shocks across distribution channels (Lee et al. 2010; Porter and Siggelkow 2008; Rothaermel and Hill 2005; Siggelkow 2001; Tripsas 1997). Research on fit has long held a static orientation applying a cross-sectional approach. However, there is increasing demand for more dynamics (Miles and Snow 1994; Venkatraman 1989; Zajac et al. 2000). Recent empirical studies on fit taking dynamics into account include Lee et al. (2010) and Peteraf and Reed (2007; 2008), amongst others.

Within a single industry, market structuration leads to changes in complementary relations (Li and Greenwood 2004). Market structuration is the process whereby initially separate market niches mature into 'related' market niches with supporting institutional infrastructures. The relatedness of market niches is a function of social processes and beyond the control of individual firms. The social processes involved are inter-firm learning (e.g., through competitive imitation, personnel flows, trade associations, etc.), creation of support structures (e.g., lawyers, suppliers of raw material, venture capitalists, etc.), and legitimization (e.g., through market analyst publications). The benefits of market structuration are collective, but firms obviously need to be present in market niches to profit from their relatedness. Li and Greenwood (2004) state that the greater the number of firms concurrently operating in the same market niches, the more related that set of market niches becomes due to an increased efficiency and legitimacy of that particular market niche portfolio. It is based on the notion that markets are not 'out there', but are cognitively constructed by the interactive behaviours of producers (Harrison 1981). In this study, we take product markets as market niches. Because market structuration increases product market relatedness and thus a firm's resource bundle relevance for underpinning its product market portfolio, we hypothesize that market structuration positively influences firm growth.

H1d: Market structuration increases firm growth.

1.3.3 Resource creation and resource leverage: a paradox

There seems to be a paradox though in simultaneously attempting to accomplish resource creation and resource leverage. On the one hand, resource leverage focuses on exploiting existing resources, creating efficiencies among existing resources, and building more co-specialization, linkages, and fit among resources. Focusing on resource fit stimulates structure and inertia among resources which hurts a firm's ability to create new resources. On the other hand, resource creation focuses on exploring new resources that also need integration with other, existing resources. That demands flexibility among resources to (temporarily) de-link existing, co-specialized resources which hurts a firm's resource fit. We posit there is a paradox such that both resource creation and resource leverage can add to growth, but also hurt each other. Not acknowledging this paradox can confound performance outcomes in two important ways. First, adding resources can have a positive, direct growth effect, but can negatively influence resource fit which results in a negative, indirect growth effect. For example, even given the large number of customers who are familiar with buying their computer over the internet after the arrival of Dell in the PC industry, adding a direct sales channel over the internet presented challenges for HP because it was incompatible with its extensive network of distributors. A direct internet channel would bring additional sales, but would at the same time demotivate and upset its distribution network and thereby have a negative impact on HP's performance. Second, leveraging resources and increasing resource fit can have a positive, direct growth effect, but could restrict resource creation which can have a negative, indirect growth effect. For example, an airline buying and operating only one type of aircraft benefits from standardizing training and maintenance needs. However, it also limits the airline's ability to adjust to changing customer demands in terms of in-flight accommodation and long- versus short-haul flights.

To describe and understand why this paradox between resource creation and resource leverage emerges, we look at different constraints within firms.

Organizational learning constraints

Organizational learning is constrained. Organizations learn by focusing on either exploration or exploitation (March 1991). Exploitation involves using the resources a firm already has and exploration leads to adding new resources (Sitkin and Sutcliffe 1994). However, applying both learning modes simultaneously is extremely hard to do for at least two reasons. First, exploration and exploitation have contradicting implications with regard to breaking and creating linkages among resources (Danneels 2002). For example, when entering new markets, firms are focused on exploring and creating new market-related resources which involves de-linking existing market-related resources from existing complementary, technology-related resources. De-linking complementary resources harms resources' fit and implies moving away from a focus on resource configuration. When exploiting existing markets, firms are focused on integrating existing resources and coordinating co-specialization by (re-)linking resources to create fit which implies moving away from creating resources.

Second, exploration and exploitation are nested learning experiences that can substitute each other (Levinthal and March 1993). Being nested means that learning occurs at different but

interrelated levels simultaneously. For example, a business firm learns both which markets to enter and how to effectively compete in these markets. But increasingly learning how to compete effectively in existing markets decreases the need to explore new markets, and vice versa. Because of their nested relationship, exploration and exploitation can substitute each other. For example, refining an existing technology substitutes for identifying a better one. And creating close ties with existing customers substitutes for exploring new customer relationships. Therefore, increasing resource fit substitutes for finding new, better resources. Similarly, finding new, better resources substitutes for the need to increase resource fit.

Managerial capacity constraints

Managerial capacity is constrained in several ways. First, managers have only a limited amount of time to divide between resource creation and resource configuration (amongst other things). Focusing on both can thus be difficult. Limited managerial capacity with respect to time is identified as a limitation to firm growth (Penrose 1959).

Second, a manager's resource cognition can be a limitation to growth. Resource cognition involves identifying resources and assessing their fungibility potential (Danneels 2011). Managerial beliefs and mental models underpin a manager's cognition and decision-making (Adner and Helfat 2003). But managers' mental models and beliefs often fall victim to inertia (Hambrick and Mason 1984). Because managers have an important role to play in organizational learning (Mom, Van Den Bosch, and Volberda 2007), their mental inertia might also not be beneficial to balancing exploration and exploitation activities. Previous research shows that firms focusing on internal fit and existing mental models have difficulties creating and configuring new resources, especially when their internal fit relationships are stable (Siggelkow 2001). Also, focusing on tight fit among resources can hold firms captive in a reinforcing feedback loop between their actions and cognition without enough attention for resource creation (Danneels 2003).

Third, high resource fit implies more complementarities among resources in a firm's resource bundle that can render managers unwilling to change for at least three reasons. First, highly complementary systems are well-oiled, efficient systems in which change seems unnecessary. When changing one or more elements, one can not only lose more than the individual value of that element (Milgrom and Roberts 1995), but it is also difficult to assess upfront the impact on other complementary relationships in the system (Porter and Siggelkow 2008). Also, previous simulation work shows that changing complementary systems in search for a higher fit implies a performance drop at least in the short-term which is not appealing to managers, even when ultimately resulting perhaps in higher performance (Levinthal 1997). The more complementarities present in a firm's current system, the higher and steeper the short term drop in performance. Second, highly fitted systems have many ambiguities making it difficult to distinguish among different elements. That makes it hard to adapt or replicate that system (Hoopes and Madsen 2008; Rivkin 2000; Teece 2007). The more complementary relationships in a firm's resource bundle, the more difficult to disentangle which resources are affected by what change. Also, the more complementarities among resources in a resource bundle, the more value can be attributed to their combination relative to their individual contribution. That makes it harder for managers to make a calculated guess on what resources are driving performance in what manner which results in higher fear to make wrong decisions. Third, highly fitted systems consist of complementary relationships that cannot be

changed easily. For example, in service firms, partners' knowledge of particular clients is used in combination with the firm's specialized knowledge to perform services for its clients (Helfat 1997; Hitt et al. 2001). Client-specific knowledge and firm's specialized knowledge are said to be co-specialized (Teece 1986). Building these types of client relationships is based on experience and accumulated efforts, and demands time and commitment. Also, client-specific information is often not easily transferred to other relationships. Moreover, partners are human resources that are constrained by time and space. Therefore, opportunity costs and co-specialization of complementary resources constrain firms in their ability to change.

Structural constraints

Organizational structures are constrained. Rigidity within organizational structures arises when firms try to accommodate competing goals of organizational efficiency and flexibility (Thompson 1967). Striving for both efficiency and flexibility within organizations creates negative tensions that can hurt performance (Brown and Eisenhardt 1998; Brown and Eisenhardt 1997; Eisenhardt et al. 2010; Tushman and O'Reilly III 1996; Uzzi 1997). Fit among resources bears upon stability and continuity to create and maintain the appropriate linkages that bind them together. For example, one is cautious changing cross-departmental task forces and middle managers linking R&D and marketing too suddenly and too heavily given a potential loss of precious knowledge on complementary resources such as valuable market knowledge or distribution channel relationships. Also, such organizational knowledge is typically not built overnight but requires some time investment. However, changing the linkages is needed when integrating new resources (Taylor and Helfat 2009). Resource creation involves temporarily delinking and re-linking resources (Danneels 2007). Delinking and re-linking implies a temporal misfit, i.e., a decrease in fit. Although stability and change might be complementary in the long run, they are likely to be conflicting in the short-run (Farjoun 2010). The more a firm is focused on resource creation, the more it breaks up valuable linkages, the less time it has to develop appropriate linkages and the less it can develop complementarities. The more a firm is focused on resource fit, the less it wants to break up valuable linkages and the more it wants to develop and maintain appropriate linkages and resulting complementarities. Based on previous discussion we hypothesize the following.

H2: Resource leverage decreases resource creation.

H3: Resource creation decreases resource leverage.

1.3.4 Controls

We control for the following firm level variables. First, we control for firm age and firm size which can influence growth (Delmar, Davidsson, and Gartner 2003). Young and small firms are expected to grow faster than more mature, larger firms (Bahadir, Bharadwaj, and Parzen 2009). Also, firm size can influence both the relatedness and performance of firms (Tanriverdi and Lee 2008). Large firms offer more extensive product lines (Sorenson 2000), have more synergy exploitation opportunities, and suffer more from managerial diseconomies (Nayyar 1993). Firm age is associated with within-industry diversification strategies and firms' performance (Stern and Henderson 2004). The effect of firm size and age on resource creation and resource leverage is less predictable, but we expect an effect because older and bigger firms tend to have higher inertia.

Second, we control for firms with a strategy focused on being a generalist versus attaining specialist status in their respective product markets. Firms largely focused on specialist status could capture higher margins leading to higher growth. However, their specialist focus means they are less focused on diversification. Not controlling for these differences in product market strategy between generalists and specialists could introduce bias in our results.

Third, inorganic growth is controlled for by including a dummy indicating whether a firm has been part of a merger or acquisition in the past two years. This dummy also controls for possible growth effects by deploying a dynamic capability related to accessing external resources through a merger or acquisition (Danneels 2011).

Fourth, competitive intensity is added to the model, as it is an important variable in industrial organization theory to explain firm growth (Bahadir et al. 2009). Firms experiencing higher competitive intensity in their various product markets have lower growth compared with firms in less competitively intensive product markets (Ang 2008). Firms under higher competitive pressure can also feel pushed to enter new product markets in search for less competition and the need to increase their resource fit to enhance their resource bundle's relevance. Adding competitive intensity also controls for possible distorting performance effects of within-industry diversification due to multi-market competition (Li and Greenwood 2004).

Fifth, we add the influence of lagged resource fit on both resource creation and resource leverage. A high level of resource fit could make it harder for firms to further increase fit. The higher a firm's level of resource fit, the less opportunities might be available for related market entry. Also, we can expect firms to go after highly related markets first. For example, the Uppsala model of international market entry states that firms internationalize first towards more related markets that are similar to their home country (Johanson and Vahlne 1977). Therefore, we expect that lagged resource fit negatively influences resource creation and resource leverage.

We also control for country and year fixed effects.

1.4 Data and variable operationalization

1.4.1 Data

We test our hypotheses in a single-industry in a service context. We collect data on individual market research agencies that are member of ESOMAR, a worldwide industry organization. Our data source is a set of yearly directories covering the period 1990-2005. It comprises information on firms' general characteristics and their presence in 33 product markets. Product markets in the market research industry can broadly refer to particular research solutions (advertising research, pricing studies, etc.), market sectors (financial services, retail/wholesale, etc.), or research methods (focus groups, telephone interviews, etc.). The result is an unbalanced data set with 3,091 observations from in total 275 firms. Our unit of analysis is the firm or country-level subsidiary of multi-country firms. The data set contains Belgian, Dutch, and U.K. firms. Because we have an

unbalanced data set based on a near-census sample from a major industry organization, chances for sample selection bias are low.

1.4.2 Variable operationalization

Firm growth is measured as the two-year rate of firm size growth in terms of number of employees (See equation 1). We take the natural log of number of employees. We focus on two-year growth to reflect the long-term character of entering product markets. We focus on growth in number of employees instead of sales or assets for the following reasons. First, in professional service firms such as in consulting, law, or accounting, human capital is the most important form of capital (Kor and Leblebici 2005; Malos and Campion 1995). Firm growth is then most essentially captured by the growth in number of employees (Weinzimmer, Nystrom, and Freeman 1998). Second, deployment of resources and exploiting market opportunities is primarily embedded in the skills and tacit knowledge of a firm's employees (Sirmon and Hitt 2003). Third, different growth indicators based on for example employees versus sales, are attributes of the same underlying theoretical concepts of growth and therefore tend to be correlated (Weinzimmer et al. 1998).

$$GROWTH_{i,j,t} = \frac{LN(EMPLOYEES+1)_{i,j,t} - LN(EMPLOYEES+1)_{i,j,t-2}}{LN(EMPLOYEES+1)_{i,j,t-2}} \quad (1)$$

Resource creation is measured as the number of actual product market entries that a firm undertakes over a period of two years. With every product market entry, a firm needs to build certain market-related resources (e.g., knowledge of customer needs and preferences, purchasing procedures, sales access to customers, and customer goodwill), or technology-related resources (e.g., knowledge of new product technology, appropriate production processes), or both (Danneels 2002; 2007). The more markets a firm enters, the more such resources that need to be created. However, there will also be some existing resources that a firm can leverage when entering new product markets (Penrose 1959). For example, a firm can offer new products to existing customers while leveraging existing customer-related resources, a firm can offer existing products to new customers while leveraging existing technology-related resources, and a firm can always leverage existing supporting resources such as financial resources and organizational culture when offering new products to new customers. We outline in the next section how we measure resource leverage by making use of the relatedness among various product markets and a firm's specific choices what markets to enter. Notwithstanding that resource creation and resource leverage might overlap partly due to the way we try to measure them, from our Pearson correlations table (See table 2) we see that our measures for resource creation and resource leverage measure separate things and are different enough to make inference on their effects.

We measure resource leverage, average level of resource fit, and market structuration based on a fine-grained measure of product market relatedness in combination with a firm's product market presence and entry choices. We measure product market relatedness as follows. Inspired by previous work by Lee (2008) and Bryce and Winter (2009), we develop a product market relatedness index based on product markets' joint occurrence within the industry. The product market relatedness index for the combination of product markets x and z is given in Equation 2. The relatedness between product markets' x and z is based on their joint occurrence in the product market portfolios of all firms in all countries in year t (See equation 2). $P_{x,i,j,t}$ is a dummy indicating

firm i 's presence in product market x in country j in year t . In our data set a market research agency can be present in at least 1 and maximum 33 product markets. From the industry-level product market relatedness index we calculate a firm-specific product market portfolio relatedness as the sum of the relatedness among all product markets present in a firm's product market portfolio, which signifies the fit of the resources in its resource bundle that underpins its product market portfolio. Equation 3 shows the calculation of a firm's resource fit based on product market portfolio relatedness where $\{PF_{i,j,t}\}$ represents the product market portfolio of firm i in country j in year t .

$$R_{x,z,t} = \frac{\sum_{i=1}^I \sum_{j=1}^J \frac{P_{x,i,j,t} P_{z,i,j,t}}{\sum_{i=1}^I P_{x,i,j,t}}}{\sqrt{\sum_{i=1}^I \sum_{j=1}^J P_{x,i,j,t}^2} \sqrt{\sum_{i=1}^I \sum_{j=1}^J P_{z,i,j,t}^2}} \quad \text{with } i,j = 1,2,\dots,33 \quad (2)$$

$$FIT_{i,j,t} = \sum_{z \in \{PF_{i,j,t}\}} \sum_{x < z \text{ and } x \in \{PF_{i,j,t}\}} R_{x,z,t} \quad (3)$$

From the relatedness among product markets and a firm's product market choices, we operationalize our key variables. We measure resource leverage as the change in a firm's product market portfolio relatedness induced by that firm's diversification activity in the period we assess its growth performance (See equation 4). The relatedness among product markets in a firm's product market portfolio reflects the relevance of the firm's resource bundle to underpin that product market portfolio. When entering product markets, i.e., diversification activity, a firm that increases its product market portfolio relatedness also increases its resource bundle relevance and resource fit which means the firm can leverage existing resources for the new markets entered. Because we only want to include effects on resource leverage by the focal firm's decisions, we exclude possible market structuration effects on a firm's overall product market portfolio relatedness and use the lagged level of product markets' relatedness.

We measure a firm's average level of resource fit as the two-year average level of its total product market relatedness captured by its product market portfolio choices (See equation 5). We use total product market relatedness instead of number of product markets in which the firm is present (although they are highly related) as our measure for level of resource fit, because the former is more closely related to a firm's resource bundle and the fit among the resources in the bundle.

We measure market structuration as a firm's change in total relatedness driven by changes at aggregated industry level (cf. $R_{x,z,t}$ is measured at industry level) (See equation 6). Our measure for market structuration reflects the change in a firm's total product market relatedness that is driven beyond a firm's own control, i.e., it is driven by all firms in the industry and their choices with respect to their product market portfolio.

$$LEVERAGE_{i,j,t} =$$

$$\sum_{z \in \{PF_{i,j,t}\}} \sum_{x < z \text{ and } x \in \{PF_{i,j,t}\}} R_{x,z,t-2} - \sum_{z \in \{PF_{i,j,t-2}\}} \sum_{x < z \text{ and } x \in \{PF_{i,j,t-2}\}} R_{x,z,t-2} \quad (4)$$

$$AVGFIT_{i,j,t} = \frac{\sum_{z \in \{PF_{i,j,t}\}} \sum_{x < z \text{ and } x \in \{PF_{i,j,t}\}} R_{x,z,t} + \sum_{z \in \{PF_{i,j,t-1}\}} \sum_{x < z \text{ and } x \in \{PF_{i,j,t-1}\}} R_{x,z,t-1}}{2} \quad (5)$$

$$\text{STRUCTURATION}_{i,j,t} = \sum_{z \in \{PF_{i,j,t}\}} \sum_{x < z \text{ and } x \in \{PF_{i,j,t}\}} R_{x,z,t} - \sum_{z \in \{PF_{i,j,t}\}} \sum_{x < z \text{ and } x \in \{PF_{i,j,t}\}} R_{x,z,t-2} \quad (6)$$

Our approach for inferring resource bundle relevance and resource fit based on a firm's product market portfolio choices aggregated at industry level has several advantages. First, we develop a time-varying, dynamic approach. Having a dynamic, time-varying relatedness measure is important as relatedness and industries can change over time (e.g., Lee et al. 2010; Li and Greenwood 2004; Tanriverdi and Lee 2008). Also, research on fit increasingly demands longitudinal approaches for measuring fit (e.g., Peteraf and Reed 2007; 2008). Moreover, following the large literature stream on dynamic capabilities, it has become imperative to consider a firm's resource bundle dynamic (e.g., Helfat et al. 2007; Teece 2007; Teece et al. 1997). Not only resources can change, but also a resource bundle's configuration can be altered (e.g., Danneels 2011; Eisenhardt and Martin 2000). Second, we build continuous measures. Within-industry diversification is assumed to be related, so within-industry relatedness embodies degree of relatedness which is best measured continuously (Li and Greenwood 2004). Third, we infer resource bundle relevance and resource fit indirectly from a firm's product market portfolio. Indirect measures have important advantages that increase external validity (Bryce and Winter 2009). We don't have to exhaustively list all individual resources possibly relevant because we infer a firm's resource bundle's aggregated relevance based on product market presence. Product market presence is much more visible than individual resources. There is a much lower chance of neglecting relevant product markets instead of neglecting relevant individual resources. Also, we don't have to make any assumptions regarding the form of fit relationships among resources because we infer fit merely from the joint occurrence of product markets across firms. Moreover, we avoid a tautological approach when measuring relatedness as it is not based on performance. Previous research uses product adoption patterns to measure fit (Arora 1996; Athey and Stern 1998). In a similar vein, we use product market entry patterns. Measuring relatedness based on joint occurrence of product market presence across firms is also consistent with the conceptualization of intra-firm business activity coherence, such as Teece's (1994) 'survivor principle', which dictates that economic competition will lead to the disappearance of relatively inefficient organizational forms. The survivor principle states that if corporations engage in activity A almost always engage in activity B, that these activities are highly related. Also, it is in line with prior research stating that whether relatedness actually occurs depends upon the density of firms involved (Li and Greenwood 2004).

Firm level control variables are measured as follows. Firm age is the natural log of years since firm foundation. Firm size is the two-year lagged natural log of number of employees. A firm's generalist focus is the two-year average of 1 minus the number of self-claimed product market specializations relative to the number of product markets in which the firm is present. We include a dummy indicating whether a firm has been part of a merger or acquisition in the last two years. Competitive intensity is measured as the two-year average of the Hirsch-Herfindahl Index of all the product markets in which the firm is present in a particular year and country based on number of employees. We also include dummies to control for country and year fixed effects.

1.5 Model estimation and specification

We estimate a system of three equations specifying respectively firm growth, resource creation and resource leverage as dependent variables. Resource creation and resource leverage also occur as endogenous, independent variables. Because we have a system of equations including endogenous variables we use a three-stage least squares (3SLS) estimation procedure (Greene 2003; Hayashi 2000). Ordinary least squares (OLS) would produce inconsistent parameter estimates because of the endogeneity among variables. Error terms across equations are also correlated, thus a 3SLS approach is more efficient than a two-stage least squares approach.

A 3SLS approach consists of three stages. First, we regress our endogenous variables resource creation and resource leverage on a set of exogenous instrumental variables being their own lags and the lagged scope of the firm. We use appropriate instrumental variables that are correlated with their endogenous variables, much less correlated with other endogenous variables and the dependent variable firm growth, and not included in the main equation. We use fixed-effects regression to account for firm-specific unobserved heterogeneity and within-firm correlation across observations over time. Second, we replace our endogenous variables with their predicted values from the first stage and estimate our three equations separately. We calculate cross-equation correlation among errors. Third, we estimate our system of equations simultaneously while accounting for the cross-equation error correlation.

We include a sample selection correction in our growth equation for two reasons. First, we want to control for non-survival. Second, we control for the fact that failure of firms precludes their ability to grow whatever decisions they might take. A selection correction variable eliminates an important form of omitted variable bias that can create inconsistent estimates (Greene 2003). We model the probability that a firm does not survive till next year by estimating a logistic regression that accounts for repeated firm observations. We regress the odds of firm failure on resource creation and resource leverage. When correcting for selection bias it is also recommended to include an instrumental variable that is not present in the main equation (Puhani 2000). As instrumental variable we use a dummy indicating whether the firm is active in multiple countries. We include the predicted odds of non-survival from our logistic regression in our system's growth equation.

The three equations below together with Figure 1 detail our model specification. The unit of analysis is firm-country level. Subscripts refer to firm i , country j , and year t . We use lagged resource fit as control variable in our resource creation and resource leverage equations. Reasons include the following. First, an already high level of fit could make it harder for firms to increase it. Second, when regressing a change variable it is normal practice to include the base level as control variable. Third, we can expect firms to go after highly related markets first. Fourth, the higher a firm's product market portfolio relatedness, the less opportunities might be available for future, related market entry. We also include lagged market structuration as control variable in our resource creation equation. It is possible that an aggregated industry-level confirmation of previous managerial judgment gives managers more confidence for new research creation.

Growth equation:

$$\begin{aligned} \text{GROWTH}_{i,j,t} = & \alpha_0 + \alpha_1 \widehat{\text{CREATION}}_{i,j,t} + \alpha_2 \widehat{\text{LEVERAGE}}_{i,j,t} + \alpha_3 \text{AVGFIT}_{i,j,t} + \alpha_4 \text{STRUCTURATION}_{i,j,t} + \\ & \alpha_5 \widehat{\text{SURV}}_{i,j,t} + \alpha_6 \text{AGE}_{i,j,t} + \alpha_7 \text{SIZE}_{i,j,t-2} + \alpha_8 \text{GENERALIST}_{i,j,t} + \alpha_9 \text{MA}_{i,j,t} + \alpha_{10} \text{CI}_{i,j,t} + \\ & \sum_{j \in \{\text{Belgium, Netherlands}\}} \alpha_j \text{COUNTRY}_j + \sum_{t=1995}^{2005} \alpha_t \text{YEAR}_t + \varepsilon_{1,i,j,t} \end{aligned}$$

Resource creation equation:

$$\begin{aligned} \text{CREATION}_{i,j,t} = & \beta_0 + \beta_1 \widehat{\text{LEVERAGE}}_{i,j,t} + \beta_2 \text{FIT}_{i,j,t-2} + \beta_3 \text{STRUCTURATION}_{i,j,t-2} + \beta_4 \text{AGE}_{i,j,t} + \\ & \beta_5 \text{SIZE}_{i,j,t-2} + \beta_6 \text{GENERALIST}_{i,j,t} + \beta_7 \text{MA}_{i,j,t} + \beta_8 \text{CI}_{i,j,t} + \varepsilon_{2,i,j,t} \end{aligned}$$

Resource leverage equation:

$$\begin{aligned} \text{LEVERAGE}_{i,j,t} = & \gamma_0 + \gamma_1 \widehat{\text{CREATION}}_{i,j,t} + \gamma_2 \text{FIT}_{i,j,t-2} + \gamma_3 \text{AGE}_{i,j,t} + \gamma_4 \text{SIZE}_{i,j,t-2} + \gamma_5 \text{GENERALIST}_{i,j,t} + \\ & \gamma_6 \text{MA}_{i,j,t} + \gamma_7 \text{CI}_{i,j,t} + \varepsilon_{3,i,j,t} \end{aligned}$$

$\text{GROWTH}_{i,j,t}$ = firm growth; $\text{CREATION}_{i,j,t}$ = resource creation; $\text{LEVERAGE}_{i,j,t}$ = resource leverage; $\text{AVGFIT}_{i,j,t}$ = average level of resource fit; $\text{STRUCTURATION}_{i,j,t}$ = market structuration; $\widehat{\text{SURV}}_{i,j,t}$ = predicted odds of firm failure; $\text{FIT}_{i,j,t-2}$ = two-year lagged resource fit; $\text{AGE}_{i,j,t}$ = Firm age; $\text{SIZE}_{i,j,t-2}$ = two-year lagged firm size; $\text{GENERALIST}_{i,j,t}$ = focus on being a generalist versus specialist; $\text{MA}_{i,j,t}$ = Merger & Acquisition dummy; $\text{CI}_{i,j,t}$ = Competitive Intensity; COUNTRY_j = Country dummies; YEAR_t = Year dummies

‘Please insert figure 1 about here’

1.6 Results and discussion

1.6.1 Results

Tables 1 and 2 show the main descriptive statistics and Pearson correlations for all dependent, independent, control and instrumental variables. There is no sign of multicollinearity issues.

‘Insert table 1 and 2 about here’

Table 3 shows the standardized coefficient estimates, standard errors and p-values for all three equations. We also report the importance of each estimate based on its relative squared standardized coefficient in percentages (RSSCP). We observe the following.

First, results from the growth equation support hypotheses H1a, H1c, and H1d that resource creation, level of resource fit, and market structuration positively influence firm growth. Our results do not indicate a significant growth effect of resource leverage, i.e., no support for H1b. Variables related to resource bundle relevance and resource fit have an accumulated RSSCP value of more

than 20%, whereas resource creation has 8% RSSCP. A higher RSSCP refers to a higher relative impact of the respective variables. Control variables are in line with expectations. There are negative growth influences from the odds of non-survival, firm age and firm size. Conducting a merger or acquisition positively influences firm growth. Firm size is an important determinant of firm size growth (RSSCP: 42%).

Second, results from the resource creation equation support hypothesis H2. Resource leverage has a negative influence on resource creation. Its RSSCP value is more than 20%. Also, we see significant control variables. A firm's lagged resource fit negatively influences resource creation whereas a lagged market structuration positively influences resource creation. We note that firm age, firm size and a focus on being a generalist positively influence resource creation.

Third, results from the resource leverage equation show that resource creation negatively influences resource leverage which supports hypothesis H3. All control variables also show significant results. The control variable lagged level of resource fit negatively influences resource leverage with an RSSCP value of more than 78%. Firm age, firm size, focus on being a generalist, and a merger or acquisition dummy positively influence resource leverage. Competitive intensity has a negative influence.

In sum, our results support almost all our hypotheses. There are positive growth consequences of resource creation, level of resource fit, and market structuration. We also observe the negative reciprocity between resource creation and resource leverage which, in combination with direct growth effects of resource creation and level of resource fit, constitutes a paradox when deploying a dynamic capability.

'Insert table 3 about here'

However, different firms might cope differently with the observed paradox when deploying their dynamic capability. Table 4 and 5 show model results when investigating firms' dynamic capability heterogeneity along different contingencies. We focus on important contingencies such as a firm's product market scope, age and focus on being a generalist versus specialist. We choose scope because experience in exercising a dynamic capability might add to a firm's knowledge on how to effectively and efficiently exercise that capability. Previous research indicates for example that more frequent deployment of dynamic capability can add to their learning (Zott 2003) and that underlying routines and processes of capabilities work better the more they have been exercised (Helfat et al. 2007). We choose age and generalist focus because both can have important but different effects on firm inertia. For example, routines become more entrenched as an organization ages which can increase inertia (Hannan 1998; Hannan, Polos, and Carroll 2004; Nelson and Winter 1982). Also, age and generalist focus are significant in both our resource creation and resource leverage equations.

For each contingency we categorize firms in a low versus high category based on the sample median for specific country-year combinations. We further estimate in all equations the effects of our main variables for each category. Split-sample estimation was not preferred because of the high loss of information due to small samples and the inability to estimate control variables across categories. We prefer categories instead of continuous measures for our contingencies because of the lower complexity and lower multicollinearity when not having to include three-way interactions.

Table 4 shows the standardized estimates, standard errors and p-values when estimating our three equations while categorizing firms based on a high versus low generalist focus and a narrow versus broad market scope. We observe the following. First, resource creation is significantly adding to growth only when the firm has a narrow product market scope. Second, we see that firms with a broader scope and thus higher experience in terms of deploying their dynamic capability deal better with the observed reciprocity in the sense that they have a significantly positive influence of resource creation on resource leverage and a significantly negative but low effect of resource leverage on resource creation. Third, results show a significantly negative effect of lagged resource fit on both resource creation and resource leverage across all categories. Fourth, having a high focus on being a generalist together with a narrow scope is a firm's worst position with low growth and a significantly and highly negative reciprocity between resource creation and resource leverage.

Table 5 shows the standardized estimates, standard errors and p-values when estimating our three equations while categorizing firms based on a high versus low age and a narrow versus broad market scope. We observe the following. First, resource creation is again only directly adding to growth when the firm has a narrow product market scope. Second, firms with a broader scope have again a significantly positive influence of resource creation on resource leverage and a significantly but low negative effect of resource leverage on resource creation. Third, results show a significantly negative effect of lagged resource fit on both resource creation and resource fit across all categories. Fourth, having a high age together with a narrow scope is a firm's worst position with low growth and a significantly and highly negative reciprocity between resource creation and resource leverage.

'Insert table 4 and 5 about here'

1.6.2 Robustness checks

We conducted two important robustness checks. First, it is essential to check results for different growth specifications. We check for other growth measures such as absolute change in firm size, mean-centred firm size growth, market share growth in terms of firm size and absolute level of firm size, but there are no meaningful differences with results from our main model. Second, growth implications of resource creation and level of diversification are robust when leaving out methodological adaptations for endogeneity, simultaneity and selection correction. However, the negative reciprocity between resource creation and resource leverage disappears. That is obvious because these decisions are taken simultaneously when deciding which new markets to enter. Only leaving out the selection correction control variable does not change our reciprocity results meaningfully.

1.6.3 Theoretical and methodological contributions

Our most important theoretical and methodological contributions are related to the diversification literature and the literature on dynamic capabilities. First, we contribute to the diversification literature. We provide theoretical and empirical underpinnings for a link between within-industry diversification and growth performance by including arguments and measures from the RBV and dynamic capabilities literature. For example, important arguments include the close link between resources and products, resource fungibility, and the paradox between resource creation and resource leverage when deploying a dynamic capability. Also, we develop an adequate

relatedness measure that links diversification with underlying resource logic to explain the outcomes of diversification. We show how an indirect method based on a firm's product market portfolio can be applied to measure product market relatedness that reveals information on a firm's resource bundle relevance and fit. Besides being indirect, other important characteristics of our relatedness measure are that it is time-varying, continuous, and non-tautological. Moreover, we not only include firms' diversification level, but also firms' diversification activity. Resource creation and resource leverage are related to a firm's own diversification activity and resource fit is related to a firm's level of diversification. Our study thus incorporates both static and dynamic aspects of diversification and is therefore better suited to link diversification to growth performance. Also, we empirically identify market structuration as an important new growth dimension of diversification. Market structuration is related to the industry's overall diversification activity. Although market structuration is beyond a firm's control, it has implications for a firm's growth when diversifying. The main findings are that resource creation, resource fit, and market structuration are important determinants of firm growth when diversifying across product markets within an industry. However, to understand growth performance of firms, it is key to acknowledge the negative reciprocity between resource creation and resource leverage which we identify as a core tension when deploying a dynamic capability.

Second, we contribute to the dynamic capabilities literature. We contribute to the theoretical and empirical questions whether and how dynamic capabilities influence firm growth. Some have argued that growth happens to firms randomly instead of being related to intended strategic actions, which questions central concepts in the literature such as core competencies, managerial capacity constraints, and dynamic capabilities (Geroski 2000; Geroski 2005). The theory on dynamic capabilities suggests an influence of dynamic capability on firm growth but a widespread call for empirical research whether and how dynamic capability is related to firm growth is still open (Helfat et al. 2007). With this study, we help filling this gap in the literature and provide a common strategic decision context in which dynamic capability can offer guidance to growth aspirations. We show that firms can grow non-randomly through deploying their dynamic capability. Dynamic capability deployment involves resource creation to add new resources to a firm's resource bundle, resource leverage to share existing resources across product markets, and resource configuration to create fit among a firm's resources. Our results show that both resource creation and resource fit have a direct, positive influence on firm growth.

However, our key finding here is that we identify a core paradox that is taking place when deploying a dynamic capability, i.e., a paradox between creating and leveraging resources. Previous research suggests a dynamic capability involves finding a balance between two opposing forces (Eisenhardt et al. 2010; Helfat et al. 2007). We build further on that by explaining and empirically assessing a paradox between two core processes when deploying a dynamic capability. We empirically show a simultaneous, negative reciprocity between resource creation and resource leverage which has an indirect, negative impact on firm growth. This negative reciprocity denotes a paradox at the heart of the dynamic capability concept. When deploying a dynamic capability, firms create new resources, leverage existing ones, and configure their resources to achieve fit, which creates positive performance consequences. However, resource creation and leverage also hurt each other which creates indirect, negative performance consequences. We suggest that learning, managerial and organizational constraints form the basis for this negative reciprocity. A firm is constrained by its limited learning ability to simultaneously exploit existing and explore new

resources. A firm's managers are constrained by their limited time availability, and their limited and inert resource cognition. An organization is constrained in its limited ability to simultaneously focus on both flexibility and efficiency.

However, firms that can cope with this paradox find a way for growth through a dynamic capability. Indeed, some firms are affected more by this paradox than others. A firm's dynamic capability seems to be heterogeneous. Our results on three firm contingencies, i.e., product market scope, age and focus on being a generalist versus a specialist, show that firms more experienced in deploying their dynamic capability are less affected by the reciprocity between resource creation and resource leverage. But that comes only at a time when deploying that dynamic capability, i.e., entering a new product market, is less of an option for those firms to grow because they have already entered many markets. Results also show that firms should avoid a narrow product market scope while not being specialized in its product markets, or a narrow product market scope at a relatively high age.

Our empirical results on firms' dynamic capability heterogeneity are only a start for discussion. We suggest that herein lies an important and fruitful research avenue for more empirical work on dynamic capabilities. Previous research on microfoundations of dynamic capability can help the discussion. Teece (2007) identifies various routines and processes undergirding dynamic capability, i.e., so-called microfoundations. These microfoundations relate to resource cognition and underlying processes to sense and seize market opportunities and to (re)configure complete resource bundles. His listing of several important microfoundations can help identifying appropriate sources of a firm's dynamic capability heterogeneity in function of the type of dynamic capability and the empirical context. Eisenhardt et al. (2010) focus on microfoundations dealing with a firm's trade-off between efficiency and flexibility. They pay significant attention on how to bridge the cognitive and structural contradiction when simultaneously striving for efficiency and flexibility. Their listing of several ways how managers can deal with that contradiction can spur further empirical research on how to achieve performance-enhancing dynamic capability heterogeneity.

Also, we contribute by making decisions with an impact on resources and dynamic capability more tangible and measurable. We show how an indirect method based on a firm's product market portfolio can be applied to study a firm's dynamic capability and measure resource fit non-tautologically. The idea of using a firm's product market portfolio to infer characteristics of its resource base is not new. Our empirical, indirect approach for measuring resource bundle relevance and resource fit is attractive for several reasons. First, we have a lower chance of neglecting relevant resources, their complementarities, and changes in their complementarities. Second, we avoid a tautological approach for measuring fit because we do not measure fit based on increased performance. Third, our indirect approach is easily applied in various contexts, across time periods and across firms. However, we acknowledge that our indirect approach should be complemented with more research trying to measure the dynamics of resources and their complementarities more directly. We are convinced both direct and indirect approaches are needed.

1.6.4 Managerial contributions

This study also offers at least two important managerial contributions. First, we provide insights on how to grow in a relatively 'safe' within-industry environment. Our results show that if managers

want to capture growth opportunities associated with new product market entry, they need to focus on three important aspects of a dynamic capability, i.e., resource creation, resource leverage, and the negative reciprocity between the two. New market-related or technology-specific resources have to be created in order to successfully target and compete in a product market. At the same time, managers should try to make use of fungible resources that can be shared across different product markets to benefit from existing knowledge, increased efficiencies and valuable complementarities. However, we identify and describe a core paradox when deploying a dynamic capability. We show that both resource creation and resource fit lead to growth, but that managers should be aware of the negative reciprocity between creating and leveraging resources. Our study helps managers identifying possible causes for these negative effects in the form of different constraints at different levels within the organization. We discuss constraints with respect to organizational learning, managerial capacity, and organizational structure. That way, our study and its outcomes are informative for multiple organizational functions, i.e., functions related to product portfolio management, resource and process management, and top management decision-making.

Second, our methodology used is easily replicable across business units, industries, or environmental contexts. It provides firms with an actionable method to benefit from diversification. Also, we provide an easy approach for managers to build active knowledge on how their product market portfolio is in congruence with their available resource bundle. Our results on the influence of resource fit on firm growth suggests that active knowledge and management of product market complementarities together with benchmarking your own product market portfolio versus competitors' are worthwhile things to do.

1.7 Limitations and conclusion

We conclude with our main findings. First, we show that within-industry diversification leads to firm growth. Second, we find that both a firm's diversification activity and level of diversification add to growth, with the relative influence of level of diversification being highest. Also, we empirically identify an important, new dimension of diversification that increases growth, i.e., market structuration, being the aggregated diversification activity of all firms at industry level that has an influence on product market relatedness. Third, based on the RBV and dynamic capabilities literature, we theoretically and empirically identify underlying resource mechanisms of within-industry diversification that lead to growth. We find that, when deploying a dynamic capability to diversify across product markets, resource creation and resource fit add to firm growth with resource fit relatively seen more influential. However, we detect and discuss a paradox when deploying such a dynamic capability. We observe a negative and simultaneous reciprocity between resource creation and resource leverage which hurts firm growth indirectly. There is firm heterogeneity with respect to dynamic capability's growth consequences and internal reciprocity. We investigate firm heterogeneity based on three important firm contingencies. Finally, this study has important contributions for theory, methodology, and managerial practice.

However, there are some limitations that deserve further attention. First, we restrict our sample to one particular industry and focus on within-industry diversification. It would add to the generalizability of our study's results when the hypotheses are tested in other types of industries

and also in a cross-industry diversification context. Our measures and methodology can be easily applied in other industries without loss of conceptual meaning. Our choice for a single industry is appropriate though, because our measures for resource leverage, level of resource fit, and market structuration are based on product market relatedness, industry evolutions, and social processes which are industry-specific. Second, our focus on a firm's product market portfolio additions to measure resource creation and leverage might neglect other forms of change in a firm's resource bundle such as deleting resources and accessing external resources that can have an impact on firm growth. Integrating simultaneous firm decisions on product market exits and resource deletions leaves ample room for further research but is beyond the scope of this study. Accessing external resources through for example mergers or acquisitions is controlled for in our estimations. Third, previous work considers many different dimensions of a firm's environment, such as its velocity, complexity, ambiguity, and unpredictability, when modelling a firm's trade-off between efficiency and flexibility (Davis, Eisenhardt, and Bingham 2009). Also, the effect of within-industry diversification on firm performance is contingent upon environmental change induced by competitive activity (Stern and Henderson 2004). Notwithstanding we include market structuration that is a reflection of industry evolutions, and our country and time fixed effects are not significantly related to growth, further exploring the role of different dimensions of a firm's context on the appropriateness of deploying a dynamic capability seems interesting. Our empirical identification and growth consequences of market structuration imply that market structuration is also an appropriate environmental dimension that needs to be taken into account in future studies.

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1.9 Tables

Table 1: descriptives

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Std</i>	<i>Minimum</i>	<i>Median</i>	<i>Maximum</i>
GROWTH _{i,j,t}	2145	.043	.149	-.569	0	1.414
CREATION _{i,j,t}	2241	2.690	3.465	0	2	29
LEVERAGE _{i,j,t}	2227	.202	2.121	-11.791	0	11.790
AVGFIT _{i,j,t}	2617	7.988	3.887	.034	8.197	15.212
STRUCTURATION _{i,j,t}	2227	.092	.262	-.457	.007	1.365
AGE _{i,j,t}	3091	2.608	.893	0	2.708	4.407
SIZE _{i,j,t-2}	2166	3.206	1.426	.693	2.890	9.222
GENERALIST _{i,j,t}	2626	.801	.184	0	.804	1
MA _{i,j,t}	2629	.027	.162	0	0	1
CI _{i,j,t}	2629	.227	.077	.079	.204	0.448
Country Belgium	3091	.161	.368	0	0	1
Country Netherlands	3091	.228	.419	0	0	1
Country UK	3091	.611	.488	0	1	1

Table 2: Pearson correlations

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	GROWTH _{i,j,t}	1														
2	CREATION _{i,j,t}	.064*	1													
3	LEVERAGE _{i,j,t}	.087*	.370*	1												
4	AVGFIT _{i,j,t}	-.039	-.045*	.114*	1											
5	STRUCTURATION _{i,j,t}	.053*	.167*	-.093*	.130*	1										
6	FIT _{i,j,t-2}	-.079*	-.186*	-.287*	.903*	.107*	1									
7	STRUCTURATION _{i,j,t-2}	.031	.140*	-.118*	.086*	-.029	.140*	1								
8	AGE _{i,j,t}	-.138*	.011	-.021	.357*	.023	.367*	.040	1							
9	SIZE _{i,j,t-2}	-.157*	.017	.006	.442*	.025	.427*	.055*	.535*	1						
10	GENERALIST _{i,j,t}	-.032	-.063*	.035	.141*	.016	.118*	-.073*	-.049*	-.178*	1					
11	MA _{i,j,t}	.023	-.003	.005	.218*	.051*	.219*	.056*	.198*	.293*	-.130*	1				
12	CI _{i,j,t}	-.003	-.017	-.093*	.098*	.116*	.113*	.259*	.008	.012*	.083*	-.023	1			
13	CREATION _{i,j,t-2}	.061*	.381*	-.022	-.020	-.070*	.000	.147*	.012	.031	-.046	-.027	-.039	1		
14	SCOPE _{i,j,t-2}	-.078*	-.174*	-.267*	.889*	.088*	.982*	.134*	.341*	.385*	.151*	.198*	.103*	.029	1	
15	LEVERAGE _{i,j,t-2}	-.002	.078*	-.240*	.125*	.016	.248*	-.115*	-.037	.051*	.036	.024	-.030	.345*	.248*	1

* significant at .05 level

Table 3: Model estimates (3SLS)

System R^2 : 0.1119	$GROWTH_{i,j,t}$				$CREATION_{i,j,t}$				$LEVERAGE_{i,j,t}$			
Independent variables:	Estimate	SE	p-value	RSSCP	estimate	SE	p-value	RSSCP	estimate	SE	p-value	RSSCP
$CREATION_{i,j,t}$	0.087	0.006	0.008	8.41					-0.139	0.090	<.0001	5.76
$LEVERAGE_{i,j,t}$	0.023	0.004	0.509	0.61	-0.418	0.116	<.0001	24.32				
$AVGFIT_{i,j,t}$	0.111	0.002	0.012	13.77								
$STRUCTURATION_{i,j,t}$	0.075	0.019	0.070	6.27								
$\widehat{SURV}_{i,j,t}$	-0.097	0.342	0.004	10.53								
$FIT_{i,j,t-2}$					-0.687	0.043	<.0001	65.83	-0.512	0.020	<.0001	78.17
$STRUCTURATION_{i,j,t-2}$					0.220	0.280	<.0001	6.76				
$AGE_{i,j,t}$	-0.060	0.007	0.057	4.00	0.084	0.157	0.005	0.97	0.079	0.103	0.007	1.86
$SIZE_{i,j,t-2}$	-0.194	0.003	<.0001	41.78	0.105	0.071	0.001	1.53	0.166	0.047	<.0001	8.25
$KF_{i,j,t}$	-0.015	0.022	0.611	0.24	0.058	0.503	0.024	0.46	0.091	0.332	0.000	2.45
$MA_{i,j,t}$	0.051	0.019	0.065	2.88	0.027	0.452	0.301	0.10	0.050	0.300	0.050	0.74
$CI_{i,j,t}$	0.026	0.057	0.414	0.78	0.013	1.117	0.612	0.02	-0.096	0.716	<.0001	2.77
$COUNTRY_j$ (Base: UK)	0 out of 2			0.82								
$YEAR_t$ (Base: 1994)	0 out of 11			9.92								
INTERCEPT	+	0.048	0.035		+	0.674	<.0001		+	0.551	0.001	

RSSCP: relative squared standardized coefficients in percentages (%)

Table 4: Model estimate heterogeneity in terms of focus on being a generalist versus product market scope (3SLS)

System R^2 : 0.2088	Dependent variables:	$GROWTH_{i,j,t}$			$CREATION_{i,j,t}$			$LEVERAGE_{i,j,t}$		
	Independent variables:	estimate	SE	p-value	estimate	SE	p-value	estimate	SE	p-value
High-High*	$\widehat{CREATION}_{i,j,t}$	0.097	0.0100	0.2112				0.090	0.1183	0.0969
	$\widehat{LEVERAGE}_{i,j,t}$	0.020	0.0076	0.5106	-0.123	0.1933	<.0001			
	$\widehat{AVGFIT}_{i,j,t}$	0.225	0.0028	0.0431						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.017	0.0241	0.6225						
	$\widehat{FIT}_{i,j,t-2}$				-1.033	0.0462	<.0001	-1.245	0.0282	<.0001
High-Low	$\widehat{CREATION}_{i,j,t}$	0.230	0.0096	0.0073				-0.483	0.1082	<.0001
	$\widehat{LEVERAGE}_{i,j,t}$	0.007	0.0076	0.8470	-0.316	0.1743	<.0001			
	$\widehat{AVGFIT}_{i,j,t}$	0.041	0.0031	0.5234						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.033	0.0299	0.3308						
	$\widehat{FIT}_{i,j,t-2}$				-0.622	0.0613	<.0001	-0.678	0.0302	<.0001
Low-High	$\widehat{CREATION}_{i,j,t}$	0.019	0.0112	0.7930				0.121	0.1299	0.0158
	$\widehat{LEVERAGE}_{i,j,t}$	0.003	0.0082	0.9255	-0.046	0.2135	0.1678			
	$\widehat{AVGFIT}_{i,j,t}$	0.309	0.0029	0.0032						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.082	0.0313	0.0064						
	$\widehat{FIT}_{i,j,t-2}$				-0.758	0.0484	<.0001	-0.952	0.0306	<.0001
Low-Low	$\widehat{CREATION}_{i,j,t}$	0.233	0.0073	0.0047				-0.400	0.0908	<.0001
	$\widehat{LEVERAGE}_{i,j,t}$	0.008	0.0061	0.8101	-0.282	0.1557	<.0001			
	$\widehat{AVGFIT}_{i,j,t}$	0.109	0.0027	0.0976						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.039	0.0344	0.1816						
	$\widehat{FIT}_{i,j,t-2}$				-0.767	0.0568	<.0001	-0.834	0.0264	<.0001
SHARED**	$\widehat{STRUCTURATION}_{i,j,t-2}$				0.209	0.2841	<.0001			
	$\widehat{SURV}_{i,j,t}$	-0.090	0.3435	0.0069						
	$\widehat{AGE}_{i,j,t}$	-0.056	0.0066	0.0785	0.076	0.1539	0.0091	0.032	0.0900	0.2140
	$\widehat{SIZE}_{i,j,t-2}$	-0.211	0.0035	<.0001	0.082	0.0708	0.0074	0.129	0.0418	<.0001
	$\widehat{GENERALIST}_{i,j,t}$	0.027	0.0317	0.5032	0.102	0.6883	0.0036	0.196	0.4071	<.0001

	MA _{i,j,t}	0.029	0.0198	0.3000	0.019	0.4525	0.4554	0.029	0.2670	0.1963
	CI _{i,j,t}	0.033	0.0579	0.3180	0.008	1.0964	0.7368	-0.094	0.6196	<.0001
	COUNTRY _j (Base: UK)	0 out of 2								
	YEAR _t (Base: 1994)	0 out of 11								
	INTERCEPT	+	0.0526	0.2854	+	0.7886	<.0001	+	0.5295	<.0001

*'High-high' block indicates the estimates for the category with a high focus on being a generalist and high scope.

**'Shared' indicates the estimates for control variables across categories.

Table 5: Model estimate heterogeneity in terms of age and product market scope (3SLS)

System R^2 : 0.2015	Dependent variables:	$GROWTH_{i,j,t}$			$CREATION_{i,j,t}$			$LEVERAGE_{i,j,t}$		
	Independent variables:	estimate	SE	p-value	estimate	SE	p-value	estimate	SE	p-value
High-High*	$\widehat{CREATION}_{i,j,t}$	0.057	0.0092	0.4365				0.095	0.1104	0.0673
	$\widehat{LEVERAGE}_{i,j,t}$	0.006	0.0069	0.8571	-0.122	0.1811	0.0003			
	$\widehat{AVGFIT}_{i,j,t}$	0.250	0.0026	0.0244						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.070	0.0229	0.0424						
	$\widehat{FIT}_{i,j,t-2}$				-1.072	0.0470	<.0001	-1.245	0.0274	<.0001
High-Low	$\widehat{CREATION}_{i,j,t}$	0.177	0.0097	0.0268				-0.319	0.1088	<.0001
	$\widehat{LEVERAGE}_{i,j,t}$	0.005	0.0077	0.8715	-0.256	0.1746	<.0001			
	$\widehat{AVGFIT}_{i,j,t}$	0.059	0.0031	0.3421						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.006	0.0375	0.8384						
	$\widehat{FIT}_{i,j,t-2}$				-0.659	0.0590	<.0001	-0.774	0.0304	<.0001
Low-High	$\widehat{CREATION}_{i,j,t}$	0.047	0.0135	0.5793				0.186	0.1485	0.0007
	$\widehat{LEVERAGE}_{i,j,t}$	0.012	0.0095	0.6906	-0.051	0.2407	0.0909			
	$\widehat{AVGFIT}_{i,j,t}$	0.234	0.0035	0.0319						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.005	0.0338	0.8577						
	$\widehat{FIT}_{i,j,t-2}$				-0.704	0.0491	<.0001	-0.932	0.0345	<.0001
Low-Low	$\widehat{CREATION}_{i,j,t}$	0.246	0.0075	0.0039				-0.477	0.0921	<.0001
	$\widehat{LEVERAGE}_{i,j,t}$	0.009	0.0060	0.8021	-0.333	0.1566	<.0001			
	$\widehat{AVGFIT}_{i,j,t}$	0.086	0.0026	0.1821						
	$\widehat{STRUCTURATION}_{i,j,t}$	0.062	0.0286	0.0726						
	$\widehat{FIT}_{i,j,t-2}$				-0.721	0.0604	<.0001	-0.694	0.0262	<.0001
SHARED**	$\Delta \widehat{FIT}_{ext.i,j,t-2}$				0.211	0.2852	<.0001			
	$\widehat{SURV}_{i,j,t}$	-0.089	0.3489	0.0092						
	$\widehat{AGE}_{i,j,t}$	-0.019	0.0102	0.6942	0.107	0.2300	0.0144	0.114	0.1377	0.0033
	$\widehat{SIZE}_{i,j,t-2}$	-0.204	0.0035	<.0001	0.089	0.0711	0.0038	0.140	0.0419	<.0001

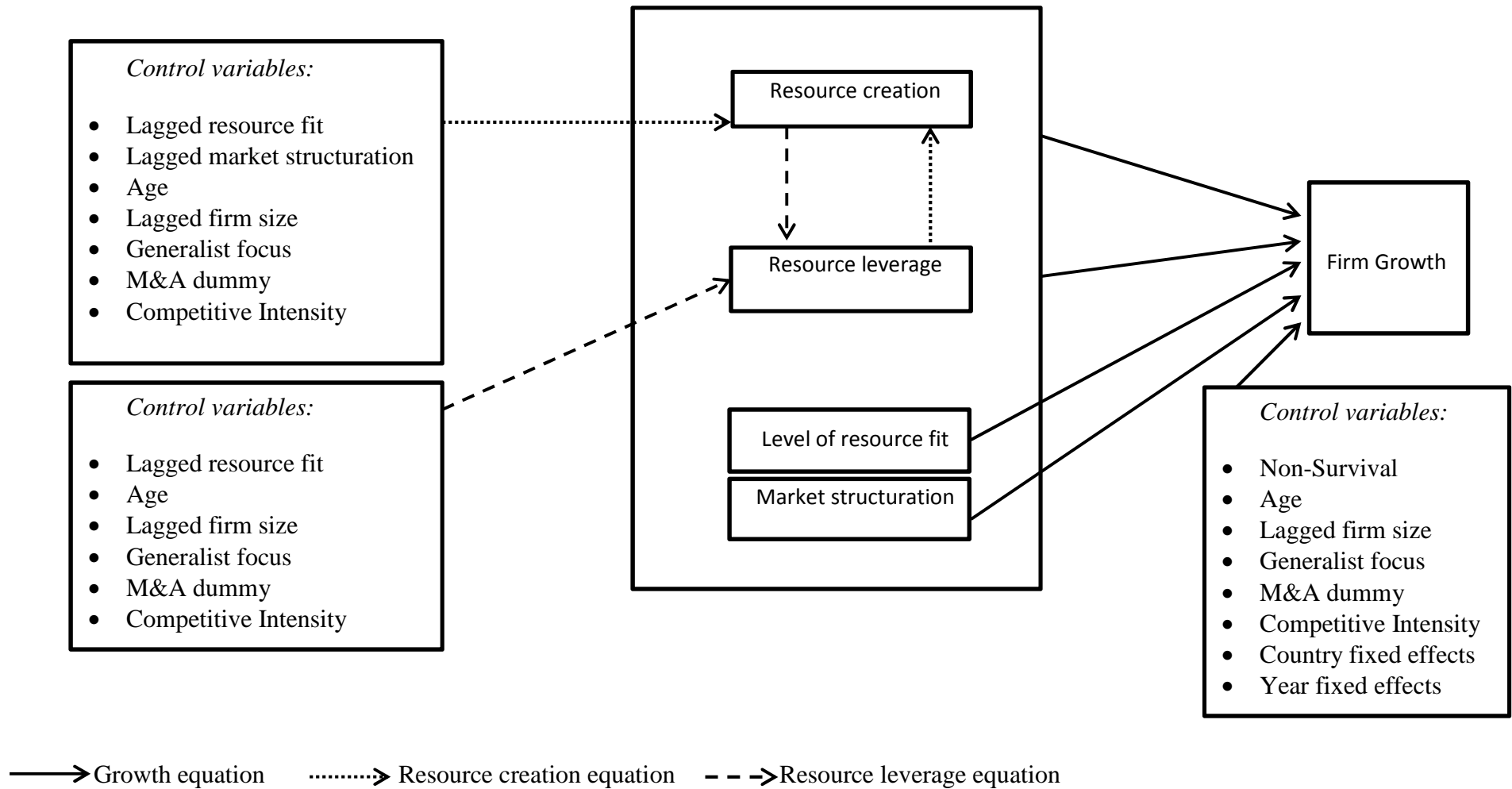
	KF _{i,j,t}	-0.008	0.0229	0.7858	0.043	0.4973	0.0907	0.057	0.2913	0.0092
	MA _{i,j,t}	0.050	0.0195	0.0762	0.031	0.4497	0.2251	0.038	0.2641	0.0886
	CI _{i,j,t}	0.030	0.0577	0.3584	0.016	1.1061	0.5224	-0.088	0.6248	<.0001
	COUNTRY _j (Base: UK)	0 out of 2								
	YEAR _t (Base: 1994)	0 out of 11								
	INTERCEPT	+	0.0562	0.2944	+	0.8886	<.0001	+	0.5784	<.0001

*'High-high' block indicates the estimates for the category with a high age and high scope.

**'Shared' indicates the estimates for control variables across categories.

1.10 Figures

Figure 1: model specification



Study 2 Success Drivers of Launching a Business Model

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2.1 Abstract

Business models and their innovation are on top of the executive priority list as they hold great promise for differentiation and performance benefits. Many business model innovations are featured and praised for their success. Also, for every innovator with a new business model, there are often numerous copycats launching the same business model in a particular geographic market. However, we observe large differences in success across market launches of the same business model. This study addresses the lack of empirical and theoretical guidance on how ventures can succeed when launching a business model. We focus on four market entry decisions, i.e., entry timing, product adaptation, scale of entry, and strategic control, that influence the business model's value drivers and ability to create and capture value, and find important main and interaction effects on how they impact survival of the launched business model. Thereby we argue it is important to treat the business model as a separate unit of analysis, different from industry, firm, product, or technology. Moreover, we theoretically and empirically indicate that there are not only differences but also an interplay between the business model and a product market strategy, which holds important consequences for the market entry literature. The context of this study involves the free daily newspaper business model introduced by *Metro International* early 1995, which disrupted the paid daily newspaper business model in many countries worldwide. We collect and analyse data on free daily newspaper ventures' launch and survival, market entry decisions, and venture and market characteristics. We observe important first-mover advantages associated with launching the business model, while it is recommended to stay close to the product(s) as introduced by the business model innovator. Moreover, we observe that first-mover advantages are increased when launching big, and that late-mover disadvantages are exacerbated when launching with differentiated products. This study offers several contributions for theory, managerial practice, and policy makers.

Key words: business model innovation, market entry, first-mover advantage, survival, newspaper

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2.2 Introduction

Business models take centre stage in many managerial and academic discussions. Many believe that a business model holds greater promise for differentiation and performance benefits compared to a product or technology. Across industries, business model innovation consistently scores very high on the CEO's agenda (IBM Global Business Services 2006; 2012). Many business model innovations are featured and praised for their apparent success. Well-known examples include Netflix, Zara, Dell, iPod/iTunes, Southwest Airlines, ING Direct, etc. Previous research helps explaining how to define a business model (e.g., Baden-Fuller and Morgan 2010; Zott, Amit, and Massa 2011), and possible ways to innovate and build business models (e.g., Amit and Zott 2012; McGrath 2010).

Just like product and process innovations, a business model innovation triggers copycats (Casadesus-Masanell and Zhu 2013; Teece 2010). For each innovator with a new business model, there are often numerous copycats trying to launch the same business model in their own geographic markets. A copycat business model refers to the same business model as the innovation at hand, but introduced by competitors in a particular geographic market or by the innovator itself in other geographic markets, after the original business model innovation was first launched. However, we see large differences in success across market launches of the same business model. This study addresses the lack of empirical and theoretical guidance on how ventures can succeed when launching a business model. Do you need to be a first mover in your market (e.g., Nespresso) or can you afford moving at a later stage (e.g., Amazon.com)? Do you need to launch an exact copy of the innovator's business model (e.g., Microsoft's Xbox) or should you try to innovate your business model as well (e.g., Nintendo's Wii)? Is it better to reduce your commitment by sharing the risk (and control) with others (e.g., Next Issue Media) and/or should you make early, large-scale investment in the business model (e.g., Schibsted)?

We focus on four market entry decisions, i.e., entry timing, product adaptation, scale of entry, and strategic control, that may impact the outcome of launching the business model and that are not pre-defined by the underlying business model. Based on these decisions' influence on the business model's value drivers and ability to create and capture value, we develop hypotheses on how they impact survival of the launched business model. We use numerous business examples of possible effects these entry decisions can have on the business model's performance potential, while integrating theoretical reasoning from mainly the resource-based view, transaction cost economics, systems theory perspective, signalling theory, and market entry literature. We argue that the business model constitutes a separate unit of analysis, different from industry, firm, product, or technology. Moreover, we posit there are not only differences but also an interplay between the business model and a product market strategy. When launching a business model, the outcome effects of particular launch decisions can thus not be copy-pasted from the product entry literature.

Our context involves the advent of free daily newspapers, i.e., a business model innovation disrupting the paid daily newspaper industry. In February 1995, *Metro International* introduces the first free daily newspaper *Metro* in Stockholm, Sweden. We collect data from 29 countries across Europe and Canada where free daily newspaper ventures have been launched between 1995 and 2010. For a census of 155 free daily newspaper ventures across these countries, we collect and

analyse data on free daily newspaper ventures' survival, market entry decisions, and venture and market characteristics.

This study offers several contributions. First, this study helps to fill the void of theoretical and managerial guidance on how to launch a business model. By focusing on the commercialization stage of a business model instead of the invention stage, we make an important shift towards better understanding how business models can provide (sustainable) competitive advantage in markets not immune for competitive dynamics.

Second, we show that copycatting a business model is an important and viable innovation strategy. There can only be one business model innovator, and we show that it is not always the innovator who benefits the most from its innovation. Our results tell that business models should be launched with the appropriate launch decisions to be viable. We detect four key launch decisions, together with important interactions, that impact the survival of a business model. It should help both incumbents and new entrants that are confronted with new, disruptive markets and business models or designing them themselves, to be better able to foresee and predict success and failure in those new market niches.

Third, we provide more information on the conceptual and empirical underpinnings of how to better delineate the differences (but also the interplay) between both the business model and a product market strategy. Business model innovation has an influence on the product market strategy, but product market strategy decision variables also have an influence on the (sustainable) competitive advantage associated with a business model. Therefore, this study shows that the market entry literature is also important at the level of the business model. We indicate that market entry decisions do not only play a role when launching new products or entering new geographic markets, but also when launching a business model. This can offer a new perspective on market entry decisions, also when applied to entering new product or geographic markets. Because market entry decisions also have an influence on the underlying business model's performance potential, the underlying business model can influence what the outcome will be of particular market entry decisions taken for new product or geographic market entry. Therefore, trying to explain winning versus failing product introductions or new market entries might be put in a different perspective, when also incorporating the underlying business model in the analysis and taking into account the influence of entry decisions (or product and technology characteristics) on that same business model.

Fourth, policy makers and wider society can benefit from this study. Policy makers benefit from a better understanding of how new markets and disruptive business model innovations operate, spread out and survive, in order to make more informed decisions whether it is appropriate to protect incumbent markets or not in the case of business model innovation. Also, we add to the discussion whether it would be suitable to provide possibilities to protect intellectual property derived from the business model. Moreover, the specific context of our study, the media industry, is a very important industry from a policy perspective because of its democratizing character and powerful public information channel.

This paper proceeds as follows. First, we provide the conceptual background of a business model, business model innovation, and how various launch decisions can influence a business

model's success. Second, we describe the context and methodology we applied in this study. Third, we discuss our empirical results and findings. Fourth, we conclude by listing some limitations that offer future research opportunities.

2.3 Conceptual background

2.3.1 Business model

Previous research offers a plethora of possible business model definitions. For examples, see the special issue of *Long Range Planning* in 2010 on business models and a recent literature review by Zott et al. (2011). Most definitions contain the following elements: a customer value proposition, a profit model articulating revenue sources and cost constraints, key resources and processes, and the governance mechanism linking all stakeholders involved. Thereby, it is emphasized that these elements are not stand-alone but interdependent, i.e., they should create an integrated business model system in which the whole is more valuable than the sum of its parts (e.g., Johnson, Christensen, and Kagermann 2008; Magretta 2002; Morris, Schindehutte, and Allen 2005; Zott and Amit 2010). These interdependent elements together with the received literature point towards two key dimensions of a business model, i.e., defining the value creation for customers (that implicitly also incorporates the ability to deliver that value to customers) and the value appropriation for the focal firm and its partners (Day 2011; Sorescu et al. 2011; Teece 2010). A business model can be represented by a system of interconnected and interdependent activities that transcends the focal firm (Zott and Amit 2010). A business model as activity system articulates what activities are performed, how they are linked with each other, and how they are governed across different partners such as the focal firm, customers, suppliers, etc.

Business models can be a potential source of competitive advantage (Casadesus-Masanell and Ricart 2010; Markides and Charitou 2004; Zott and Amit 2007; 2008). Previous research links a firm's business model with financial performance measures such as revenue growth, profitability, market capitalisation, and equity growth (DeYoung 2005; Fisker and Rutherford 2002; Glick 2008; Zott and Amit 2007; 2008), and non-financial measures such as the ability to provide social value to stakeholders (Dahan et al. 2010; Yunus, Moingeon, and Lehmann-Ortega 2010). The activities that form the basis of a business model can enable value creation and appropriation by emphasizing one or multiple value drivers (Zott and Amit 2010). A firm can choose to focus on one particular value driver, but value drivers can also be mutually reinforcing, i.e., the presence of each value driver can enhance the effectiveness of any other value driver. In this study, we focus on the four value drivers as identified by Zott and Amit (2010). However, as previous research shows, it might well be that this list of value drivers is not exhaustive (Sorescu et al. 2011).

A first value driver is novelty. Novelty-centered activity systems focus on new activities, new ways of linking activities, and/or new ways of governing activities. The activity system's novelty captures the degree of innovation embodied in the business model (Amit and Zott 2012). For example, with the introduction of iPod/iTunes, Apple was the first electronics company that included music distribution as an activity (iTunes), linking it to the development of a listening device's hardware and software (iPod), and digitizing it and thereby pushing many sub-activities of legal

music downloads to its customers (iTunes store). A second value driver is lock-in. Activity systems can be designed for lock-in, i.e., their power to keep third parties attracted as business model participants by creating switching costs or enhancing network externalities. For example, eBay's activity system shows very strong positive network externalities. Because of the huge number of potential buyers (sellers), sellers (buyers) know that the odds to perform a trade at a convenient price on eBay are higher than anywhere else, so they keep coming back. In a similar vein, social networking sites such as Facebook and LinkedIn demand considerable time and effort from their members to personalize their web profile and build their networks. These investments form strong impediments to switching to other providers. A third value driver consists of emphasizing complementarities among activities. Complementarities are present whenever bundling activities within a system creates more value than running activities separately (Milgrom and Roberts 1995; Porter 1996). For example, commercial banks proved to be stronger in the recent financial crisis when they complemented deposit activities as a source of funding with lending activities. In the diamond business, polishing and distribution activities within a single business model creates value, because it enables the focal firm to produce tailor-made stones for each market segment's specific demand. Complementarities not only create value, they also enhance an activity system's value appropriation by increasing the difficulty for its imitation (Rivkin 2000). For example, whereas the activity system of Southwest Airlines is very visible and widely known, the many complementarities among its activities make that imitators are still struggling to reach similar success. A fourth value driver can be efficiency. Business models emphasizing efficiency are focused on achieving greater efficiency through reducing transaction costs. For example, third-party companies in the business process outsourcing industry, e.g., TCS, Wipro, Infosys, Satyam, and WNS, can flourish because firms want to standardize the interfaces between activities and lower transaction costs by outsourcing some activities to these third parties. Also, greater efficiency can be achieved when including specific activities, e.g., cross-docking and real-time point-of-sale information gathering at Wal-Mart, or deleting specific activities, e.g., on-board catering or seat assignment at Ryanair.

A business model reflects transactions that connect activities both within and across firms. The business model concept includes network partners, other allies and the customer, making the business model particularly useful as a new unit of analysis in which the success of the organization is closely tied to the relationships the entity has with others in the network. The locus of value creation and appropriation, and thus the appropriate unit of analysis, spans firms' and industries' boundaries (Amit and Zott 2001). It implies that a business model transcends the focal firm, and that the business model is a different unit of analysis than the firm or industry. For some business models, focusing on boundary-spanning activities, such as customer -or supplier co-creation, that link different partners with the focal firm is even the key value creator. For example, Deutsche Telekom makes partnering and co-creation with both start-ups and large, established players a cornerstone of its business model.

Although a business model creates and delivers value for customers in the form of products and the associated product market strategies, a business model is different from a product (Markides 2006) and a product market strategy (Zott and Amit 2008). A product is anything that can be offered to a market that might satisfy a want or need (Kotler et al. 2009). A single business model can offer several products (e.g., internet banks offer various savings and investment products) and one product can be sold through different business models (e.g., both Amazon and Barnes & Noble sell

books). A product market includes the set of products judged to be substitutes and customers who seek similar patterns of product-related benefits. A product market strategy is the choices a firm makes on how to compete in a particular product market. Previous research considers different generic product market strategies. For example, there are product market strategies based on whether firms create value by emphasizing a low-cost versus a differentiated offering (Porter 1980), whether a firm's scope is more geared towards generalism rather than specialism (Lambkin and Day 1989), or whether a firm can be type-casted as a so-called prospector, defender, or analyser (Miles and Snow 1978). Typical elements of a product market strategy are decisions related to scope, cost-to-deliver, and differentiation (Yarbrough, Morgan, and Vorhies 2011; Vorhies, Morgan, and Autry 2009). However, a business model not only articulates how to create value which is similar to a product market strategy, but also how to appropriate that value offered to customers. A business model thus not only focuses on how to compete on the targeted product market(s), but also on how to compete on the associated factor market(s), and how both interconnect with each other. For example, a key characteristic of Google's Android operating system is that it is open source. It attracts app developers and enables them to enhance and customize the app experience for customers. However, it can make the appropriation of value more difficult for Google, e.g., in the case of Facebook Home where Facebook develops a user interface and replaces the existing home screen on select smartphones.

In standard economic and competitive market theory there is a lack of theoretical grounding for the concept of the business model and its place as unit of analysis (Teece 2010). Economic theory assumes away, both implicitly and explicitly, many real-life economic artefacts that occur in (imperfect) markets and that form the basis for the need to design a business model to create and capture value. For example, standard economic approaches assume zero transaction costs, homogeneous products, strong property rights, costless information transfer, perfect arbitrage, market existence for all products and inventions, and no innovation. One assumes that if value is delivered, customers will pay for it. That makes business models redundant because producers and suppliers can create and capture value simply through disposing their output at competitive market prices. Customers will buy if the price is less than the utility yielded and producers will supply if price is at or above all costs including an acceptable return to their capital. The price system resolves everything and business design issues don't arise. However, perfect competition is not realistic. Products are not completely homogeneous, market entry and exit barriers do exist, innovation occurs, and there are transaction costs involved in performing activities across parties. Also, markets may not even exist or ready for particular activities or transactions, so entrepreneurs may have to build organizations and design business models in order to be able to perform them.

The preceding discussion on the definition and the conceptual foundations of the business model, and its characteristics as a separate unit of analysis different from the firm, industry, and product, helps us appreciating the relevance to study this concept for both theory and managerial practice. Also, it enables us in the next section to explaining the conceptualization of business model innovation, the identification of important decisions when launching a business model in the market, and why these business model launch decisions are worth investigating given existing research on new product launches.

2.3.2 Business model innovation and copycats

The business model is a major focal point of innovation (e.g., Casadesus-Masanell and Zhu 2013; Economist Intelligence Unit 2005; Hamel 2000; IBM Global Business Services 2012; Kim and Mauborgne 1997; Markides 1997; Mitchell and Coles 2003; Slywotzky 1996; Teece 2010). We define a business model innovation as a new-to-the-world business model with -- relative to the closest existing business model -- one or more changes in one or more ways in the activity system. One can innovate the existing business model by adding novel or deleting standard activities, by linking or sequencing activities in novel ways, or by changing one or more parties that perform any of the activities (Amit and Zott 2012). The more changes a new business model undergoes relative to the closest existing business model, the more innovative a new business model is. However, to qualify as a business model innovation, the new business model should materially alter the value creation and appropriation logic, and it should be a new-to-the-world business model that is reflected in new content, structure, governance, and/or value driver combinations of the activity system (Sorescu et al. 2011).

Although a business model and a product are two different units of analysis, a business model innovation changes the value creation logic of the product offer, i.e., it changes the way product value is traditionally perceived in the market. A business model innovation emphasizes different product attributes to those emphasized by the traditional business model (Markides 2006). For example, whereas traditional brokers sell their services on the basis of their research and advice to customers, online brokers sell by promoting their price and speed of execution. Similarly, whereas the traditional car rental business model emphasizes locations nearby airports and car quality, new business models emphasize downtown locations, price, or environmental sustainability. Business model innovation is different from technological innovation and also different from radical product innovation. The business model complements technology, and technology can be an enabler of the business model, rather than that technology is part of the business model concept per se (Zott et al. 2011). A radical product innovation is defined as a new product that incorporates substantially different technology from existing products, and can fulfill key customer needs better than existing products (Chandy and Tellis 1998). However, a business model innovation may or may not be linked to a technological innovation (Teece 2010), and emphasizes different key customer needs while offering new or existing products, rather than performing better on currently stressed key customer needs from existing products.

There is a growing consensus that business model innovation is key to firm performance (Zott et al. 2011). Business model innovation may seem less heroic than technological innovation, but without the former there may be no reward for technologically pioneering individuals, enterprises, industries, and nations (e.g., Chesbrough and Rosenbloom 2002; Doganova and Eyquem-Renault 2009; Gambardella and McGahan 2010; Teece 2010). History shows that, without an adequate business model, technological innovators will fail, even if the innovation is remarkable and later on widely adopted by society. Examples include EMI with the CAT scanner, Xerox with the personal computer, and Thomas Edison who failed commercially on many fronts. Also, business model innovations can establish a competitive advantage without an accompanying technological innovation, e.g., Dell in the personal computer industry or Southwest Airlines in the airline industry. The business model itself can represent a potential source of competitive advantage (Markides and Charitou 2004). Zott and Amit (2008) find that business models emphasizing novelty, i.e., business

model innovations, and that are coupled with either differentiation or cost leadership can have a positive impact on a firm's performance.

However, just like product and process innovations, a business model innovation attracts copycats (Casadesus-Masanell and Zhu 2013; Teece 2010). A business model is often copied by competitors. Empirical observations show that business model imitation by competitors may be successful but it can also lead to failure. For example, in 1998, British Airways launched Go, a copycat of Ryanair's no-frills model, to compete against European low-cost airlines. Also, Ryanair started in 1985 with a traditional business model, but changed in 1990 towards a no-frills business model, imitated from Southwest Airlines. Moreover, Southwest Airlines, commonly referred to as the no-frills business model innovator in the airline industry, even imitated its business model which was pioneered by Freddie Laker in the U.K. The innovator Laker Airways eventually failed. Also copycats like e.g. People's Express (U.S.), Continental Lite (U.S.), and Buzz (U.K.) failed. Another example involves the online brokerage business model innovation. The innovators of the online brokerage business model are not Charles Schwab or E*Trade. They are successful copycats of the innovative business model introduced by a joint venture called Net Investor in January 1995 to offer Internet-based stock trading. Six years later, the venture was dwarfed by the success of Charles Schwab (Charitou and Markides 2003). As of January 2000, more than 150 companies entered the online brokerage area, involving retail brokerage incumbents, start-ups, banks and technology providers. However, after the dot-com bust, the declining number of retail investors and the lowering trading margins fuelled consolidation in the online brokerage industry in the U.S. Year 2005 and 2006 has seen some major deals, such as E-Trade taking over Harrisdirect, and the merger of TD Waterhouse and Ameritrade to form TD Ameritrade. In 2008, the leading online brokers are Fidelity, E*Trade, TD Ameritrade, Charles Schwab and Scottrade. It is remarkable that these are all copycats and representing both early incumbent movers and dominant new entrants. A business model is also copied by the innovator itself in different geographical markets. Sustained performance often requires from an innovative firm not just initial innovations, but also exploitation in the form of replication in order to maximize value (Szulanski and Jensen 2008; Winter and Szulanski 2001). Replication is applied in many industries across many geographic markets. Well-known examples of a replication strategy are Intel, McDonald's, and Starbucks, amongst many others. However, replication may also be less successful (Szulanski and Winter 2002). Examples include failed replications from free, daily newspaper publisher Metro International in Spain and Croatia, and failed attempts by Wal-Mart to replicate its successful business model in Germany and South Korea.

We define a copycat business model as a business model that is imitated by a competitor or replicated by the innovator. Although a copycat business model can be new-to-the-market in which it is launched, it is not new-to-the-world and thus not a business model innovation as it copies an already existing business model. Empirical observations in the previous paragraph indicate that there are wide differences between similar business models in terms of being successful or not. Because these business models (cf., the innovator as well as the copycats) are applying the same business model with the same business model characteristics in terms of value creation and appropriation logic, and the same content, structure, governance, and value driver emphasis of the associated activity system, performance differences cannot be linked to these business model characteristics. Instead, we argue that the performance differences among similar business models depend on decisions taken when launching a particular instance of that business model. Decisions

taken at time of market launch are typically referred to as market entry decisions and can have a long-lasting effect on performance (Gielens and Dekimpe 2001; Green, Barclay, and Ryans 1995). The most important entry decisions identified in the literature that are not defined by the business model are market selection, entry timing, scale of entry, strategic control, product adaptation versus standardization, and what products to sell (Gielens and Dekimpe 2001; Gielens, Helsen, and Dekimpe 2012; Varadarajan 2010; Zott and Amit 2008). From these entry decisions we focus on entry timing, scale of entry, product adaptation, and strategic control as these seem to have an important impact on the performance potential of the business model and are not already defined by the business model. We control for market selection by taking into account characteristics such as the market's attractiveness and its competitive dynamics. Also, at the time of launching a business model, the venture's product offering is often small and focused. Therefore, we focus on product adaptation rather than product portfolio characteristics.

To further defend our choice for these four important market entry decisions ventures have to take when launching a business model, we show, based on some empirical observations, how these decisions may influence the performance potential of a business model, i.e., how they may influence the value drivers of the business model. In table (1) we relate our four market entry decisions to the value drivers of the business model, i.e., novelty, lock-in, complementarities, and efficiencies. In the next section, where we develop our hypotheses related to these four market entry decisions, we go deeper in the theoretical and conceptual underpinnings. First, we argue that entry timing, i.e., whether to be a first mover or not, is an important decision when launching a business model. Being first is per definition focused on novelty. Besides, it may also enable --albeit sometimes limited-- intellectual property protection. Examples of business models with (partial) patent protection include Netflix and Nespresso. Also, being first provides a head-start in creating possible network effects (e.g., like Amazon did in book-selling), building switching costs (e.g., like Apple did for media sales in their iTunes Store), and pre-empting competitors (e.g., like The Warehouse did in New Zealand keeping Wal-Mart out). Moreover, entering first in a market gives a venture first access to complementary resources such as suppliers and customers that may co-create value together with the focal firm. For example, Insites Consulting, an online market research agency, was the first to set up an online panel of consumers in Belgium, i.e., supplier co-creation, to provide market insights to firms ordering market research studies. Another example includes Chemstation that offers customers to customize cleaning solutions. Being first to link to suppliers or customers to co-create gives an edge by having access to the most motivated ones and creating switching costs. Being a first mover can also add value to a business model focused on efficiencies, because it enables a venture to increase learning effects, fine-tune operations, and profit from time compression diseconomies.

'Insert table (1) about here'

Second, we argue that product adaptation, i.e., whether to enter with differentiated product(s) or not, is also a key decision at launch. Product adaptations, offered through the same underlying business model, can help adapting to markets (e.g., McDonald's menu adaptations in India), differentiating from competitors (e.g., Apple versus Samsung tablets and smartphones), or generating new revenue by diversifying the product portfolio (e.g., McDonald's Arch Deluxe). Particular product features or components can also create value through lock-in (e.g., car radios that are linked with airbag warning system or vacuum cleaners that come with specific bags) or switching

costs (e.g., Apple and Google apps are very similar but demand for some learning). However, product adaptations can also hurt a business model's value by having or introducing a misfit with the associated business model. For example, Ryanair's changes to its in-flight merchandise resulted in a drop in in-flight sales, reducing the commission earned by the airline's flight attendants. As a result Ryanair pledged to increase pay levels to offset this fall, but that increased overall costs which is not compatible with the business model's overall goal. Another example includes McDonald's Arch Deluxe that was targeted towards adults with more sophisticated taste, but which was a total misfit with the business model that focuses on classics and convenience. Also, product adaptation is seen as less efficient compared to product standardization.

Third, we argue that scale of entry is a key consideration when launching a business model. A large scale can enable particular novel activities (e.g., Wal-Mart introducing real-time POS information gathering, linking it to inventory, distribution, and marketing activities through its own satellite). Also, a larger scale captures network externalities better (e.g., Facebook), creates customer and supplier switching costs (e.g., Apple's App Store), and pre-empts competition. For example, Wal-Mart's U.S. expansion in *little one-horse towns* excluded competition because the local geographic market was too small to support a similarly-sized competitor. Another example is McDonald's that, due to its overall presence, excludes many locations from competitors. Moreover, complementarities may occur only when having a certain scale, which was felt by Wal-Mart that failed to replicate its low-cost strategy in Germany and South Korea particularly due to the low-scale operations they set up there. For example, small scale operations do not lend themselves to install a sufficient power base to force suppliers to create more value through lower prices and more innovation efforts. Scale of entry can also influence the value of business models focused on efficiency. Scale economies are typically translated in efficiencies in business functions such as operations (e.g., discounters, no-frills airlines), marketing (e.g., franchising), customer activities (e.g., store within store format), etc.

Fourth, we argue that the level of strategic control, i.e., whether to share control over operations across different venture partners or not, is also a key decision at launch. This decision is close to what is defined by the business model in terms of governance structure. However, we do not focus on what partners are involved in the business model. Rather, we focus on the level of strategic control the focal firm can apply across the business model. The level of strategic control may influence the business model value drivers as follows. Strong control can avoid leakage of unique resources (e.g., Apple's ability to keep secrets in-house). Whereas shared control does not seem to have an influence on network effects, shared control can create switching costs for both parties and pre-empts attracting better partners (e.g., Nokia and Windows' strategic partnership). Also, although partners give access to complementary resources, strong control may still be needed to enforce rigid execution to capture the complementarities. For example, Ryanair partners with many stakeholders and suppliers, but maintains strong control to enforce a business model totally devoted to low-cost operations and to maintain the flexibility to change partners that may be more complementary. In a similar vein, Wal-Mart needs strong control to enforce its rigid execution of low-cost activities focused on achieving efficiencies.

In the next section, we link business model success with the survival of the venture launching the business model in a particular geographic area, and develop hypotheses on how the four launch decisions can influence survival.

2.3.3 Launch decisions' influence on business model success

When launching a business model, we argue that survival is an essential measure of success. There are at least three reasons for this. First, launching a business model embodies a high level of uncertainty, fuelled by its often disruptive effects on both demand and supply, and its potential for industry upheaval. Notwithstanding that the uncertainty may be highest for the business model innovator, launching a copycat business model can still be disruptive for many customers as well as for firms' traditional way of doing business in an industry or geographical market. It means that several stakeholders have to change behavior before it can be successful which increases uncertainty when launching a business model. The more uncertainty and ambiguity there is, the more survival is of major concern to firms. For example, when new industries or new technologies emerge, uncertainty is high and survival is considered a key performance measure (e.g., Bayus and Agarwal 2007; Christensen, Suarez, and Utterback 1998; Dowell and Swaminathan 2006). Second, business models are launched through a new venture that is confined within, across or outside firm boundaries. Similar to Zimmerman and Zeitz (2002), we consider a new venture as an organization in its early years of existence, whether initiated by an independent organization or emerged from an established organization. For new ventures, survival is a standard performance measure. Financial measures of realized performance are less suitable for assessing new ventures' performance as these ventures often have negative earnings, few tangible assets, and low or even negative book values (Zott and Amit 2007). Third, survival is a necessary condition towards competitive advantage, growth, and financial performance. That is also the reason why studies explaining firm performance other than survival check for survival bias.

In the previous section, we identified four key decisions, taken at the time when launching a business model, that are potential drivers of business model success. We discussed table (1) that shows some empirical examples suggesting the influence of important launch decisions such as entry timing, offer adaptation, entry scale, and shared control on a business model's value drivers, i.e., novelty, lock-in, complementarities, and efficiencies. In what follows, we hypothesize to what extent these launch decisions may influence the survival of a particular instance of the business model.

2.3.3.1 Entry timing

The timing to enter a particular geographic market with a business model, i.e., being first mover or not, is crucial in terms of survival. Previous research identifies various first-mover advantages and disadvantages, and late-mover advantages and disadvantages (For an overview, see, e.g., Kerin, Varadarajan, and Peterson 1992; Lieberman and Montgomery 2012; Shankar and Carpenter 2012). Most of the empirical support for first-mover advantages is found for market share and to a lesser extent for profit. With respect to survival rates empirical findings are mixed, with some reporting first-mover survival disadvantages (Golder and Tellis 1993), others identifying first-mover survival advantages in terms of reducing operational risk (Yadong and Peng 1998) or tapping into network effects (Wang, Chen, and Xie 2010), and various studies showing pioneer survival (dis)advantage

under different condition (e.g., Lilien and Yoon 1990; Min, Kalwani, and Robinson 2006; Robinson and Min 2002; Srinivasan, Lilien, and Rangaswamy 2004).

We hypothesize that, when launching a business model, being the first in a particular geographic market has important advantages, or similarly, that being a follower has important disadvantages. The resource-based view is an appropriate theoretical framework to explain mechanisms by which these first-mover advantages can be obtained (Lieberman and Montgomery 1998). First, being first puts a venture in the best position to pre-empt important assets such as geographic and perceptual space, or build unique resources such as patents or trademarks (Carpenter and Nakamoto 1989; Lieberman and Montgomery 1988; Teece 2010). The importance of taking geographic space as a business model first mover is illustrated not only by McDonald's (and many other franchisors) in many locations worldwide, but also by e.g., The Warehouse in New Zealand that pre-empted Wal-Mart. Because a new business model is often disruptive for customers, being the first enables a venture to imprint its business model characteristics and its brand in the customer's mind as prototypical (e.g., Nespresso). Also, being first may offer a venture the ability to obtain unique resources such as patents or trademarks. Although it is rather exceptional, one can try to protect its business model's intellectual property by patents, e.g., like Netflix and Nespresso did, albeit only partial patents on particular aspects of the business model.

Second, a first mover is first to develop sometimes vital political connections (Frynas, Mellahi, and Pigman 2006). Because launching a business model is often disruptive for vested, incumbent businesses, political connections can be important for success when trying to launch. Large incumbent firms together with their industry organizations often put pressure on legislative authorities to put business practices of ventures with unfamiliar and disruptive business models under scrutiny. Although a first mover has to invest in developing these political connections or fighting incumbent industry allegations, it is sometimes very useful to be offered a broad, public forum to repeatedly state your value proposition and business model design. For example, Ryanair very much liked being put aside by incumbent airlines and considered a complete industry outsider.

Third, being first in the market to launch a business model enables a venture to impose switching costs on its partners and customers to lock them in, and the first opportunity to create possible network effects (e.g., Amazon). Previous research identifies possible network effects as an important first-mover advantage (e.g., Lieberman and Montgomery 2012; Wang, Chen, and Xie 2010). Buyer switching costs can include initial time and financial investments made by the buyer, product learning efforts, and contractual switching costs imposed on the buyer. An example of buyer switching costs is the advantage Apple's iTunes Store holds over Google's Play Store. Also, switching costs for customers or suppliers can occur when the business model is focused on customer respectively supplier co-creation. For example, online consumer panels developed by market research agencies such as Insites Consulting focus on supplier co-creation, i.e., consumers providing market insights, to create value for buyers of market research studies. Being first to set up such consumer panel gives not only access to consumers that are most motivated to participate (cf., a complementary resource), but it also creates switching costs for those consumers to participate in other panels.

Fourth, a lot of ventures that are the first to launch a business model in a particular geographic market are not the business model innovator. These first movers may benefit also from particular

late-mover advantages such as learning effects and potential spillovers from the original business model innovator operating in another geographic market, while enjoying free-rider effects on some of the innovator's investments such as buyer education and new business model development. Learning effects could consist of knowledge on how the new business model works, how it can be executed successfully, and how customers react and behave. For example, Ryanair's Michael O'Leary went to Southwest Airlines to learn how to copy the business model as detailed as possible. Because a business model innovation is sometimes widely covered in both popular and specialized media, learning effects are even more likely to occur. It follows that first movers enjoy reduced uncertainty among its stakeholders with respect to the viability of the business model that is launched. Also, customers could already be acquainted with the new business model so that they barely need to be educated. Also, a positive spillover effect may be that customers who already have experience with the new business model start asking for the launch of that business model in other geographic markets (e.g., Starbucks in Belgium). Based on previous discussion, we hypothesize the following.

H1: Being the first to launch a business model in a geographic market increases survival chances.

2.3.3.2 Product adaptation

When launching a business model, a venture has to decide what product(s) to offer. On the one hand, one can exactly copy the product(s) of the business model innovator to make sure that all elements of the business model are well aligned with each other and with the product(s) in place. On the other hand, product adaptation can create a meaningful differentiation between the innovator and copycat without materially altering the business model. Product adaptation can be applied to adapt to specific market conditions (e.g., McDonald's introducing vegetarian burgers in India or Best Buy creating more experiential stores in China compared to transactional stores in U.S.), to differentiate from competitors in the same geographic market (e.g., Samsung versus Apple tablets and smartphones), to extend the current product portfolio (e.g., McDonald's Arch Deluxe), or to create lock-in (e.g., vacuum cleaners that come with particular bags) or switching costs (e.g., Google apps that are very similar to Apple apps). However, even small product adaptations can create performance difficulties for the business model. For example, Ryanair replaced duty free with other merchandise during flights and has seen a drop in in-flight sales, which reduced the commission earned by the airline's flight attendants. As a result Ryanair pledged to increase pay levels to offset this fall, but that increased overall costs which is not compatible with the business model's overall goal. Another example is McDonald's Arch Deluxe that was targeted towards adults with more sophisticated palates, but was a total misfit with the business model of McDonald's focusing on anything but customer sophistication and inconvenience.

We hypothesize that product adaptation relative to the original product(s) of the business model innovator harms survival chances. Although similar business models can have different products, products still need to be aligned with the underlying business model. Indeed, the business model also defines how one creates value for the customer which has to be translated in appropriate products. As shown in some examples above from McDonald's and Ryanair, products can be ill-aligned to the underlying business model or even introduce inconsistencies in the business model. In line with a systems theory perspective on business models (Zott et al. 2011) and advice on replicating best-practices (Szulanski and Winter 2002), it is common thinking to try to stay as close to the original innovator's business model as possible. Research in the airline industry supports this

view by finding that low-cost firms that stick to the original low-cost model seem to be more successful (Alamdari and Fagan 2005). Indeed, because of activity interdependencies and complementarities, imitating activity systems should not be done piece-wise (Porter 1996b; Rivkin 2000). Business model innovation involves a departure from industry practice, represented in not just the adoption of a single new practice but by overhauling an entire system. Imitating this innovation entails imitation of a complex system, with interdependencies between components. Rivkin (2000) conceptualizes a strategy as a set of choices, whose outcome is dependent on each other. For example, investments in machines for a complex product line are more valuable if the sales force is trained to present these types of products to customers. Thus, the value of each individual part of a business model is dependent on the choices made on other parts. This means that one should aim at optimizing the combined choice set, not the individual components. In a similar vein, Siggelkow (2002) claims that changing just one element in an organizational system is not effective because it creates an organization that is not consistent, i.e., there is no fit between individual elements. Other elements need to be adapted at the same time. This view of strategy as a set of decisions whose usefulness is interdependent shows that it cannot be imitated by changing single components. The same result cannot be attained without adopting the whole system. Also, launching an already 'proven' business model signals better performance prospects and lower strategic and operational risk, which attracts both customers and investors. When only including or excluding a limited set of activities that does not materially alter the business model, it is difficult to assess upfront how coherent the different activities will be and whether there will be significant complementarities among activities or not (Porter and Siggelkow 2008). Based on legitimacy theory, strategic group research has shown that the performance of solitary firms is lower than the performance of companies that conform more to an existing group (McNamara, Deephouse, and Luce 2003; Deephouse 1999). Therefore, we expect a negative survival impact from product adaptation.

H2a: Adapting the original product(s) decreases survival chances.

However, product adaptations can be done specifically to differentiate from competition when entering late (Shankar and Carpenter 2012). When being a first mover in a particular geographic market, entering with the same underlying business model but a different product compared to the original business model innovator operating in another geographic market, cannot be done for differentiation purposes as there is no competition yet. When firms are not the first mover in a particular geographic market, they may try to differentiate themselves from competition in their market by introducing an adapted product. However, as we have already mentioned, product adaptations can easily lead to inconsistencies or ill-aligned underlying business models, which creates serious difficulties harming survival prospects. These difficulties can arise from causal ambiguity with respect to a business model's actual value drivers, distorted interdependencies and complementarities among business model elements, and bad signals when deviating from a strategic group that conforms to a particular business model.

Product adaptation by later entrants not only has the same drawbacks as anyone trying to differentiate through product adaptation with the same underlying business model, but it also exacerbates some first-mover advantages (or late-mover disadvantages). The research stream on customer preference formation initiated by Carpenter and Nakamoto (1988; 1989) suggests that too

much differentiation might not be a good idea for later entrants. Because customers have a specific process of forming their preferences, being a first mover can install an important competitive advantage. More specifically, initial product experiences will define the relationship of the product category to related ones, will define the product attributes that are relevant for decision-making, and will define the attribute configuration that is prototypical of the category. That might be especially the case for demand-disruptive business model innovation. A first mover thus benefits because later entrants have difficulties to differentiate properly. If the product by later entrants is too different, it falls outside the category, and, if inside the category, the later entrant faces the entrenched customer category perceptions and preferences. Also, trying to adapt the product without altering the underlying business model, may result in difficulties to attract the appropriate partners that might already be locked-in by the first mover. Moreover, adapting the product without changing the value created by the business model may make it difficult to attract customers in case of important network effects or buyer switching costs. For example, if there is only a difference in value based on the 'differences' in apps from Google's Play Store versus Apple's App Store, customers would not be inclined to make the switch to Google. Also, when adapting the product(s) as a later mover, it is more difficult to benefit from late-mover advantages based on learning effects and potential spillovers, because that learning and spillover would be based on different products. For example, customers would still need to be educated somehow, and could react and behave differently towards different products. It follows that product adaptation increases uncertainty among stakeholders with respect to the viability of the product(s) introduced. Therefore, we hypothesize the following.

H2b: Product adaptation amplifies the negative impact on survival chances of being a late mover.

2.3.3.3 Entry scale

We hypothesize that a larger scale of entry can increase the odds of survival for several reasons. First, a larger scale of entry creates volume-driven cost advantages (Biggadike 1979). These cost advantages through scale can be attributed to learning effects, increased market power, managerial specialization, etc. A larger scale can create efficiencies in various business functions, e.g., purchasing, finance, marketing, operations, amongst others, that help business models create and capture value. There are also business models especially focused on efficiencies. Examples include business models focused on efficiencies in operations (e.g., discounters and no-frills airlines), efficiencies in marketing expenditures (e.g., franchise chains), efficiencies in customer time spending (e.g., store within a store format like Sephora within JC Penney), etc. Moreover, some efficiency-focused complementarities come only together with a large scale. For example, Wal-Mart needs a high number of stores with a high volume sold to support its purchasing power, its distribution system through large distribution centers, and its lowest price commitment. In Germany and South Korea, Wal-Mart could not replicate its low-cost strategy because it lacked considerable scale (Gielens, Helsen, and Dekimpe 2012).

Second, scale can provide access to and the ability to develop unique assets and resources. A larger scale can pre-empt more attractive locations in geographic and perceptual space. For example, Wal-Mart pre-empted competition in its U.S. expansion by focusing on geographic locations that were just big enough to support only one discounter, i.e., so-called *little one-horse*

towns. Another example is McDonald's that not only pre-empts geographic locations from its competitors by its huge number of locations, but also perceptual space as it is considered to be everywhere and 'always' (compared to 'sometimes' for competitors) an option if need for a fast-food hamburger option. Also, scale can make it possible to develop unique resources. An example is Wal-Mart that was, mainly thanks to its scale, was able to build and efficiently incorporate an own satellite system in its activities. Moreover, with a larger scale one is better able to develop and capture network externalities, and customer or supplier switching costs. Examples include Facebook and eBay that make heavily use of their scale to increase the associated network externalities, and Apple's App store that uses its scale to increase both customer and supplier switching costs.

Third, a large scale signals irreversibility and managerial commitment deterring competitive reactions (Chen and MacMillan 1992; Ghemawat 1991; Sharma and Kesner 1996). It also signals managerial belief in the attractiveness of the business model and the willingness for risk-taking which decreases the uncertainty surrounding launching the business model. Indeed, entrants holding more positive expectations are likely to make larger initial commitments (Caves 1998). Next to managerial belief, it also signals the ability to attract enough financial support, which is a proxy for future growth potential (Audretsch 1995). Taken together, larger scale of entry creates more legitimacy and signals the business model's value and a venture's commitment towards important stakeholders such as customers and investors, as well as to competitors, which positively adds to its survival chances. Previous research defines legitimacy as a "a generalized perception or assumption that the actions of an entity are desirable" (Suchman 1995, p. 574; Higgins and Gulati 2006). Increased legitimacy gives access to important resources such as customers, high-quality employees, partners, investors, and financial capital (Zimmerman and Zeitz 2002). These resources are vital for a venture's survival. Previous research indicates how legitimacy is important for new ventures in emerging industries (e.g., Ashforth and Gibbs 1990; Rao, Chandy, and Prabhu 2008; Suchman 1995; Van de Ven, Hudson, and Schroeder 1984; Zajac and Westphal 2004). The more uncertainty and ambiguity there is, the more important legitimacy becomes for organizational survival (Dacin 1997; Deephouse 1996; Meyer and Rowan 1977; Scott 1987; Singh, Tucker, and House 1986; Westphal, Gulati, and Shortell 1997). A venture's actions and decisions can signal legitimacy, quality, and managerial commitment towards important stakeholders such as customers, employees, partners, competitors, etc. (Spence 1973; Stiglitz 2000). For example, previous research shows that strategic decisions can signal the value of a firm's offering towards potential customers (Shane, Shankar, and Aravindakshan 2006), that particular information signals can help building a venture's underlying credibility (e.g., Balboa and Marti 2007; Davila, Foster, and Gupta 2003; Janney and Folta 2003; Rao, Chandy, and Prabhu 2008) or perceived product quality (e.g., Kirmani and Rao 2000; Milgrom and Roberts 1986; Rao, Lu, and Robert 1999), and that ventures take actions that can signal their intentions and commitment (e.g., Heil and Robertson 1991; Prabhu and Stewart 2001).

H3a: The larger a venture's business model entry scale, the higher its survival chances.

We argue there is a reinforcing effect between scale of entry and being a first mover. Scale effects can enhance first-mover advantages (Kerin, Varadarajan, and Peterson 1992). Combining a high scale of entry with being a first mover, increases the entry barriers a first mover can raise and increases the effect of scale-related entry barriers and signals because of a less competitive environment. A first mover entering large is more effective in terms of pre-empting geographic and

perceptual space, reaching minimum efficient scale without over-production, signalling managerial commitment and possible growth potential, and raising entry barriers for competition. Moreover, being a first mover while having enough scale at entry can both be necessary conditions for performing well post entry due to a combination of learning effects, time compression diseconomies, and asset mass efficiencies (Nehrt 1996). Being a first mover can provide entering ventures with beneficial learning effects (Lieberman 1989; Porter 1980; Spence 1977), while not having the disadvantage of potential time compression diseconomies (Dierickx and Cool 1989). Time compression diseconomies mean that particular tasks simply take some time to accomplish, and that diseconomies to the firm result because it spends more resources to accelerate their completion. Having a high scale of entry provides entering ventures with asset mass efficiencies (Dierickx and Cool 1989). Asset mass efficiencies mean that firms sometimes need a minimum level of investment to fully understand the technology, or by extension the business model, and gain from it. Previous research suggests there is an interaction effect between scale of entry and order of entry, but empirical confirmation is lacking (Gielens and Dekimpe 2001; Gielens, Helsen, and Dekimpe 2012; Nehrt 1996; Szymanski, Troy, and Bharadwaj 1995). Based on previous discussion and focusing on being a first mover instead of ventures' order of entry, we expect that a larger scale of entry increases the positive survival effect of being a first mover.

H3b: Being a first mover amplifies the positive impact of a higher scale of entry of the venture's business model on its survival chances.

2.3.3.4 Strategic control

The level of strategic control a venture has on its operations when entering a market is an important launch decision. Previous research in international market entry indicates that a higher level of control by the entering firm on its operations abroad has positive performance implications (e.g., Gielens and Dekimpe 2001; Johnson and Tellis 2008). Also, based on two major theoretical frameworks, i.e., the resource-based view and transaction cost economics, we can expect positive performance implications of higher strategic control in the context of a business model launch. The resource-based view argues that as the level of control increases, the firm can deploy key resources that are essential to succeed (Gatignon and Anderson 1988; Isobe, Makino, and Montgomery 2000). Control over key resources gives a firm the freedom to deploy them flexibly. Also, control safeguards key resources such as patents from leakage. Moreover, control over key resources allows for internal operational control over the execution of the business model in which key resources are often interdependent with other business model elements such as the value proposition, the profit model, and important activities. Not fully controlling how activities are performed is from an activity system perspective dangerous, because even small changes to an activity system with many complementarities can have important negative performance effects (Porter 1996; Porter and Siggelkow 2008; Rivkin 2000).

Transaction cost economics views firms and markets as alternative governance structures that differ in their transaction costs (Kim and Hwang 1992; Williamson 1975; Williamson 1981). The level of transaction costs depends on the interplay of bounded rationality, opportunistic behavior by the partners in the transaction, asset specificity of the assets involved in the transaction, and uncertainty surrounding the transaction. Transaction cost analysis suggests that the governance structure and performance of an exchange are influenced by the level of the exchange partners' specific

investments and opportunistic behaviors (Palmatier, Dant, and Grewal 2007). A firm's ability to control and monitor their partners' behavior and output is considered key in successful transactions (Rindfleisch and Heide 1997). The transaction cost economics view holds that costs increase with increasing control, and that control and commitment are inextricably linked (Luo 2001). High control in entry strategies entails high commitment, and the higher the resource commitment and desired control, the higher is the cost. In the previous section, we already highlighted the expected positive survival implications of higher commitment. Also, when markets would be efficient and competitive, market pressure would minimize the need for control. However, in the context of business models, it has been argued that business models specifically exist because of market failure and that business model launch is embedded in uncertainty and ambiguity. Therefore, when launching a business model, we expect that high control becomes more desirable.

Strategic control is exercised by a single entity or is shared across several partnering entities that jointly steer a venture. We focus on survival differences between a venture that consists of only one entity with full strategic control versus a venture consisting of several entities with shared strategic control over its operations when launching a business model. The latter relates for example to shared ownership, joint ventures, or franchises. We argue that shared strategic control decreases survival chances when launching a business model. First, in line with our reasoning on the level of strategic control above, based on previous findings and both the resource-based view and transaction cost economics, we expect that a lower level of strategic control, i.e., shared strategic control, negatively impacts survival. Second, although collaboration gives a venture the potential to leverage partners' specific knowledge or other resources (Combs and Ketchen 1999), shared strategic control reduces flexibility in resource deployment and in decision-making. Indeed, although extensive collaboration is considered the key for successful business model innovation (IBM Global Business Services 2012), it does not imply that control should be shared among collaborating partners. Moreover, shared control might increase stakeholders' uncertainty because of the negative signals that may occur following low perceived commitment when resources and risk are shared among partners. Indeed, sharing resources and risk among partners can be interpreted as a low or limited belief in the market's attractiveness. Third, the overall influence of shared strategic control is expected to negatively influence a business model's value drivers novelty, lock-in, complementarities, and efficiencies. Not shared, strong control may avoid leakage of unique resources based on for example intellectual property. Shared control creates switching costs for both parties and can thus act both positively (cf., when the partner is good) and negatively (cf., when there are better partners available) for the focal firm. Network effects substitute shared control to lock in partners in the business model. Also, whereas partners can provide access to complementary resources, shared control may be less able to enforce rigid execution of the business model and its complementarities, leading to lower performance. Similarly, business models focused on efficiencies are often strict to execute, which may be difficult to enforce with weaker or shared control.

H4a: Shared strategic control decreases survival chances.

However, we expect that shared strategic control decreases survival chances even more for later entrants. Previous research indicates that the performance effect of the level of strategic control may depend on entry timing (Gielens, Helsen, and Dekimpe 2012). When entering later, it is more difficult to reap potential benefits from shared strategic control. A venture entering first can select

the best partners available (Szymanski, Troy, and Bharadwaj 1995). Therefore, a later entrant incurs higher search costs related to finding appropriate partners to share strategic control while potentially ending up with less knowledgeable partners. Also, a first entrant has the opportunity to capture a larger market share compared with later entrants in a more competitive environment, while a later entrant sharing its strategic control of a venture even has to share the performance outcomes of its venture with its partners.

H4b: Shared strategic control amplifies the negative impact on survival chances of being a late mover.

2.4 Context and Methodology

2.4.1 Context

Our context involves the newspaper industry in which the free daily newspaper business model represents a business model innovation. The main characteristics of the free daily newspaper business model are the following. First, customers can take the daily newspaper for free instead of paying a subscription or per-issue fee. Ad revenues are the only revenue stream for the publisher. Ad agencies are thus a very important (and the only paying) customer for these publishers. Second, the free newspaper appears daily, i.e., at least four times a week, and is considered a newspaper, i.e., it contains considerably more information content than advertising content. Third, the free daily newspaper is mainly distributed in high-traffic commuter zones and in public transportation systems, e.g., through self-service racks or by hand distributors in railway, subway and bus stations. Its target customers are daily commuters using public transportation.

To qualify as a business model innovation, the new business model should materially alter the existing value creation and appropriation logic, which should be reflected in new activity content, structure, governance, and/or value driver combinations of the activity system. First, the value creation logic is different. The free daily newspaper business model emphasizes different product attributes compared to the existing paid daily newspaper business model, that in se offers the same product (cf., a daily newspaper). The free daily newspaper business model emphasizes price (cf., it's free) and convenience (cf., it's conveniently brought to you through the public transport system) towards readers, and a new, younger reader audience towards advertisers. The traditional, paid daily newspaper business model emphasizes quality (cf., editorial content) towards readers and an older and wealthier audience towards advertisers. To support this new value creation logic, the free daily newspaper business model introduces new activities such as distribution through public transport or public places, and innovative marketing (e.g., new ways of advertising within the newspaper, and campaigns and promotions linked to the newspaper's distribution), while deleting other activities such as subscription-based sales and administration, sales and distribution through retail shops and kiosks, and marketing communication campaigns on television and radio. Also, partnerships are different in the free daily newspaper business model. For example, printing is often outsourced to specific printing facilities, retail shops and kiosks are excluded from the network, public transportation authorities are becoming an important partner for distribution purposes, and advertising partnerships focus on targeting younger audiences while excluding classified ads.

Second, the value appropriation logic is different. The free daily newspaper business model is a sponsor-based business model innovation in which a focal firm monetizes its products through sponsors rather than by setting prices directly to its customer base. Several reasons make this class of business model innovation appealing to study. First, such innovations appear to be increasingly prevalent in today's economy. Second, sponsor-based business model innovations seem particularly easy to imitate. Since the purpose of our study is to analyse the competitive effects among business model copycats, the case of sponsor-based business models is most relevant. Third, sponsor-based business models will become feasible in an ever-increasing number of industries. Also, in terms of value appropriation, the public transport authorities take an important place. Whereas the retail and kiosks in the traditional paid daily newspaper business model are numerous and less powerful to appropriate much of the value created (and making their money mainly on complementary products like candy, cigarettes, and drinks), the public transport authorities have a high degree of power whether to allow publishers to distribute their free daily newspaper in the public transport system. Public transport authorities can appropriate a large part of the value created, by organizing bids among free daily newspaper publishers for exclusive distribution through their network.

Since the first introduction of a free daily newspaper, *Metro* by *Metro International* in February, 1995, both paid newspaper incumbents and new entrants across many countries worldwide entered the new market opportunity with the free daily newspaper business model. In the year 2000 there were 29 free daily newspapers in 14 European countries with an estimated circulation of 5.5 million copies, and in 2005 there existed already 81 free daily newspapers in 24 European countries with an estimated circulation of 15.4 million (Bakker 2008). By the end of 2010, free daily newspapers had been introduced in 32 European countries. The *Metro* phenomenon is not restricted to Europe though. There were 247 free daily newspapers in 56 countries worldwide with a daily circulation of 44 million copies at the end of 2007.

2.4.2 Sample

We sampled 29 countries across Europe and Canada where free daily newspapers have been introduced between 1995 and 2010. For these countries we identified a census of 155 free daily newspaper ventures. We collected and analysed longitudinal data on these free daily newspaper ventures' launch and survival, market entry decisions, and venture and market characteristics. Data sources include websites, newspaper articles, industry organization secondary databases (e.g., from WAN-IFRA), and industry expert interviews. Given the public character of the newspaper industry, our data set does not suffer from obscured and biased introduction and exit data for this business model innovation. Table (3) shows some important descriptive statistics for our sample. To make sure our sample uniformly identifies success with survival, we exclude 19 so-called *spoiler* newspapers that are solely intended to make the free daily newspaper market less attractive. We identify spoiler newspapers through their own communication of their intentions, or as those newspapers that are introduced by paid daily newspaper incumbents to compete head-on with existing free daily newspapers and exit the market from the moment competition has exited.

2.4.3 Model

Survival is a key performance measure when launching a business model. We model individual ventures' survival when they launch the free daily newspaper business model in a particular country. Therefore, we estimate the individual ventures' time-to-exit using the Cox Proportional Hazards (PH) method. Our unit of analysis is the newspaper-country combination and failure time is measured in months from entry till exit or censoring. The Cox PH model is appropriate for studying survival data that are right censored, i.e., unobserved failure or non-failure after the sampling end-date. The Cox model is a semi-parametric model in which the hazard function of the survival time, i.e., the instantaneous risk for failure, is given by the following equation (1), with $\lambda_0(t)$ an unspecified baseline hazard function, X our vector of covariates, and B the corresponding parameter vector.

$$\lambda(t|X) = \lambda_0(t) \exp(\beta'X) \quad (1)$$

2.4.4 Measures

Important independent variables are measures as follows. First, we include a dummy (i.e., FIRST) with '1' indicating that the free daily newspaper is that market's first free daily newspaper. Entry timing is captured monthly in our data set. Second, product adaptation (i.e., ADAPT) is a dummy with '1' indicating that the focal newspaper deviates from the original *Metro* newspaper in terms of consumption time, distribution model, or content coverage. The original *Metro* newspaper is a free daily newspaper with general information content, distributed in the morning among commuters in a subway system. With the entry of several other free daily newspapers, some entrants made important changes to this original product. With respect to consumption time, most free daily newspapers are distributed in the morning, but some are distributed in the afternoon or in the evening to avoid competition with existing free and paid newspapers. Another consumption time can have repercussions on content coverage and the distribution model. For example, more breaking news can be included and one could still distribute through an underground system, while the morning shift might be already allocated to a competitor. With respect to the distribution model, most free daily newspapers distribute their papers through a public transport system (in racks or by hand), while others try to differentiate by distributing the newspapers from door to door. With respect to content coverage, most free daily newspapers spread general news information on a variety of topics, while others focus on particular interest domains such as economic news or sports coverage. We consider these differences as adaptations at the product level that are not critical enough to materially alter the business model of the free daily newspaper to consider it as another business model innovation. Third, scale of entry (i.e., SCALE) is measured as the free daily newspaper's circulation at time of entry relative to the total paid circulation in that market. Fourth, we include a dummy (i.e., SHARED CONTROL) with '1' showing whether more than one firm has a stake of 10% or more in the free daily newspaper.

We control for important venture and market characteristics. We measure a venture's lack of incumbent industry knowledge and contacts with a dummy (i.e., STARTUP) showing '1' when the owner of the free daily newspaper is a start-up company. Incumbents may have different survival chances compared to new entrants. Incumbents already have a business model in place which may benefit their survival chances (e.g., Tripsas 1997; King and Tucci 2002), or downgrade them (e.g., Henderson and Clark 1990; Markides 2006; Teece, Pisano, and Shuen 1997). We could not include

venture size separately from scale of entry and incumbency status. However, as most ventures are newly founded they tend to have a similar size; they differ especially in terms of access to knowledge and ability for scale which we both include in our estimations. Competitive effects are represented by two dummies, i.e., SPOILER and DIRECT. SPOILER indicates with value '1' whether there is a spoiler free daily newspaper in the market at time of entry by the focal venture. A spoiler free daily newspaper is a free daily newspaper introduced in the market with the sole intention to make the market unattractive. We identified spoiler newspapers by their own communication of being a spoiler and compared our set of spoiler newspapers with the ones identified by a leading industry expert, i.e., professor Piet Bakker. DIRECT measures with value '1' whether the free daily newspaper competes in the same cities with already existing free daily newspapers at time of entry by the focal venture. It thus measures whether there is direct competition for the focal launch. Finally, market attractiveness represents the ability of the country's advertising market to support a free daily newspaper business model. It is measured with the one-year lagged real growth percentage for the country's GDP per capita (i.e., GDP GROWTH), and the percentage of GDP spent on advertising (i.e., AD SPEND). Multilingualism or regionalism is not likely to be an issue, because newspaper editions in different languages for the same country are often published by one venture (and thus treated as one venture as we model at the venture level) and we incorporate possible (non)competition effects by our control variable DIRECT.

2.5 Results and Discussion

2.5.1 Descriptives

Table (2) gives an overview of the free daily newspaper phenomenon for our sample of 29 countries across Europe and Canada. The table shows per country the first free daily newspapers and their time of entry, the number of free daily newspapers introduced from 1995 till 2010, the number of failures in that period, and the number of spoiler newspapers in that market. We make the following observations. First, Sweden, Germany, Finland and the Czech Republic are the first countries where free daily newspapers were introduced, whereas Slovenia, Luxembourg, Turkey, and Bulgaria are late adopters. Second, in a number of countries, i.e., Canada, Denmark, France, Ireland, and Turkey, competition is tough and rapid as there is more than one free daily newspaper introduced at the start of that country's free daily newspaper market. Also, we identified 19 free daily newspapers, i.e., more than 10 per cent of total number of introductions, as trying to spoil the market. Third, overall there were many introductions of free daily newspapers. Not only large countries like the UK and Spain had many introductions of free daily newspapers, but also smaller countries like Denmark and the Netherlands showed high entrepreneurial activity in this case. However, there were also a lot of failures. From the 155 introductions, there were 81 that failed in or before end of 2010.

Figure (1) shows the number of free daily newspapers in a selection of countries throughout the observation period. After the start in 1995, we see that the concept of free daily newspapers starts picking up in more and more countries as from 1998 with a yearly, gradual growth of new introductions from 1998 till 2004. The market is booming between 2004 and 2006, but as from 2007

and following years the market is in serious decline till 2009 when the decrease seems to be stabilizing. At the end of 2010 there are still 74 free daily newspapers present across Canada and 28 European countries.

‘Insert table (2) and figure (1) about here’

Table (3) gives an overview of our dependent, independent and control variables’ key descriptive statistics and correlations. Multicollinearity seems not to be an issue, because most correlations among our covariates are not significant at a level .05 and almost all are well below a correlation level of .3.

Table (4) shows the frequencies of our dummy interactions between FIRST and ADAPT, and FIRST and PARTNER. Every combination has observations. We take the combination with the highest frequency to be the base level which is also the base level of the main effects of the dummies involved. Also, due to identification difficulties when including all interactions in one model because of linear dependency and lack of observations, some categories of the interaction between FIRST and PARTNER are not included and become base level.

‘Insert tables (3) and (4) about here’

2.5.2 Results

Table (5) shows the results from our Cox PH regression estimations that measure the effect of our covariates on a venture’s instantaneous probability of failure. We report parameter estimates, significance levels, standard errors, and model fit for several models. Together with every covariate and interaction of interest, we also state the associated hypothesis in bold. Model 1 serves as base model and only incorporates our control variables, i.e., STARTUP, SPOILER, DIRECT, GDP GROWTH, and AD SPEND. Model 2 includes our control variables together with the main effects of our variables of interest, i.e., FIRST, ADAPT, SCALE, and SHARED CONTROL. Models 3 to 5 each report one hypothesized interaction in addition to the other variables’ main effects. Model 3 includes the interaction between entry timing and product adaptation. Model 4 includes the interaction between entry timing and scale of entry. Model 5 includes the interaction between entry timing and shared control.

‘Insert table (5) about here’

We find the following. First, from model 2, we observe that the hypothesized main effects of being a first mover (H1: -) respectively adapting the product (H2a: +) are significant (at a .05 level). It means that being a first mover increases your survival chances, whereas adapting the original product decreases them. The hypothesized main effects of scale (H3a: -) and shared control (H4a: +) are not confirmed by the results.

Second, model 3 shows that entering with an adapted product increases the negative survival impact of being a late mover, which is in line with hypothesis H2b. Both combinations of being a late mover while adapting or being a late mover while not adapting the product are significantly decreasing survival chances (at .001 respectively .05 level). However, the parameter estimate of the former is significantly higher than the parameter estimate of the latter. When taking into account

variables' standard deviations, the same applies. It implies that a potential differentiation advantage is less important than possible product-related changes to a proven business model.

Third, our results confirm our hypothesis that the positive effects of being a first mover are increased by the scale of entry (H3b: -). Indeed, from model 4 we observe that the interaction between FIRST and SCALE decreases the likelihood of venture failure significantly (at level .10). It is important to take the interaction into account, as the AIC value of model 4 with the interaction is lower than the AIC of model 2 with only the main effects. When including the interaction, however, the main effect of being a first mover disappears and the main effect of scale of entry is still not present compared to model 2 with only main effects. These results indicate that scale of entry reinforces the positive survival effect of being a first mover, while scale of entry has no effect when used by later entrants. Scale of entry is a pure moderator with no direct effect on venture survival, but with an influence on survival when used by a first mover. Being a first mover or not is more important in influencing survival compared with scale of entry. However, including scale of entry as a pure moderator increases the explanatory power of the model. Also, model 4 shows again support for the hypothesized main effect of product adaptation and has the best fit across all models.

Fourth, although model 5 shows that sharing control with partnering firms when entering the market increases the negative survival impact of being a late mover, the result does not hold when taking into account variables' standard deviation. Also, although the combinations of being a late mover while sharing control or being a late mover while not sharing control are significantly decreasing survival chances (both at .05 level), the parameter estimate of the former is not significantly different from the parameter estimate of the latter. It means our results do not confirm hypothesis H4b. Also, model 5 shows again support for the hypothesized main effect of product adaptation.

Finally, our control variables consistently show that market attractiveness measures such as lagged GDP growth and the importance of advertising expenditures in a country's GDP, increase the likelihood of failure. It seems that firms entering in tougher macro-economic times, i.e., lower advertising spend and lower economic growth, are more competitive and therefore live longer.

2.5.3 Robustness checks

We perform extra analyses to check our results for robustness. First, we measured scale of entry as the free daily newspaper's circulation at time of entry relative to the total paid circulation in that market. However, scale can also be expressed in terms of number of newspaper editions that are adapted to the regional or even local context. We check our results' robustness for measuring scale of entry as a dummy with value '1' if the number of editions set up when introducing the free daily newspaper is small (i.e., less than three editions). We find that our results are robust for this alternative measure.

Second, in our estimations we exclude 19 spoiler newspapers that are solely intended to making the free daily newspaper market unattractive. We verify whether including spoiler newspapers does change our results meaningfully. We find that our results are robust with respect to excluding spoiler newspapers.

Third, including the business model innovator itself might influence our results. However, excluding the first entry by *Metro International* in Sweden in February 1995, does not change our results. When excluding all entries done by *Metro International* as initiator or partner, we see that entering through shared strategic control increases the likelihood of failure. Therefore, it could be the case that the survival implications of shared strategic control are moderated by the type of partners involved which is in line with positive or negative signals induced by cooperating with particular partners. We analyse the survival effect of shared strategic control when one of the partners is *Metro International* or not. Results show that there is only an increase in likelihood of failure when sharing control if *Metro International* is not included as one of the partners, while we do not observe a significant effect of sharing control with *Metro International*. We caution that these results depend upon a small set of observations.

Fourth, we check for the potential bias that may arise by defining timing in terms of quarters instead of months. Our results are robust against this specification.

Fifth, we controlled for competitive effects using dummies for the presence of spoilers and the presence of direct city competition among free daily newspapers. We check for an alternative control measure, i.e., the number of free daily newspapers present in the market when entering. We find that our results are robust with respect to this extra control measure.

2.5.4 Discussion

Across many industries business model innovation consistently scores very high on the corporate agenda (IBM Global Business Services 2006; 2012). Thereby, one indicates that firms focusing more on business model innovation seem to outperform their peers. Many CEOs believe that a business model holds greater promise for differentiation and performance benefits compared to a product. Together with the attention for business model innovation and its potential for differentiation and growth, comes the importance of entry decisions when launching a business model in the market. Without a proper entry strategy, any innovation has difficulties to perform well, and we show in this study that it is also the case for business model innovations. However, there is a lack of managerial guidance on how to market a business model. This study helps to fill this void by focusing on the survival implications of important market entry decisions when launching a business model. In the literature, business models are traditionally studied from an e-commerce, strategy, or technology and innovation management perspective (Zott et al. 2011). Previous research in those domains focuses on several aspects with respect to business models, i.e., defining the business model (including why the business model concept is offered and what the business model is not), antecedents of the business model, mechanisms through which the business model influences outcomes, and outcomes and consequences of business models. With this study we contribute to several of these aspects.

Our empirical results contribute to the literature and offer managerial guidance as follows. First, we show that copycatting a business model is an important and viable innovation strategy. We observe a large number of copycat business models, i.e., the same business models as the business model innovation at hand but introduced by competitors (cf., imitation) or by the innovator (cf., replication) after the original business model innovation was first launched. Our results indicate that many copycats of the original business model innovation are able to survive while creating and

capturing value to their customers, themselves, and their partners. There can indeed only be one innovator and we show that it are not always the innovators who benefit the most from their innovation. We show it is all right to copycat. Imitation and replication are much-executed practices and can provide (sustainable) competitive advantage. Although it is important --like previous research did-- to focus on how to arrive at business model innovation while featuring examples of inspiring business model innovators, the focus might shift too much towards the importance of business model design features for its performance potential. With our novel approach to focus on how to commercialize business models instead of inventing them, we make an important shift towards better understanding how business models can provide (sustainable) competitive advantage in markets not immune from competitive dynamics. For one innovator with a new business model there are hundreds of copycats trying to launch that business model in their own geographic market. Therefore, knowing how to sustain your advantage as an innovator is key. It also shows that 'good' business model innovations travel fast. Therefore, business model innovators should be aware of the danger of imitation, not only in geographic markets in which they are present, but also in unfamiliar territories, because imitation can pre-empt a potential replication strategy. Our focus on the importance of copycats also shows that intellectual property protection with respect to business model innovation is often lacking. The question whether and how business models can be protected by intellectual property right is an important question for policy makers.

Second, our results show that copycats should be launched with the appropriate launch decisions to be viable. We detect four key launch decisions, i.e., entry timing, product adaptation, scale of entry, and level of strategic control. We observe important first-mover advantages associated with launching a business model, while it is recommended to stay close to the product(s) as introduced by the business model innovator. Moreover, we observe that first-mover advantages are increased when launching big, i.e., with a large entry scale. Also, results indicate that late-mover disadvantages are exacerbated when launching with differentiated products or by sharing control among key partners. It is important to note that the influence of the launch decisions on the business model's (sustainable) competitive advantage should be assessed with respect to the launch decisions' impact on the business model's characteristics such as its logic to create and capture value, and its value drivers, while taking into account potential competitive dynamics among business models in the appropriate (geographic) market. In this study, we give numerous business examples of how particular launch decisions can influence particular business models' value drivers, and consequently, business models' performance potential. Complementary with previous research highlighting design characteristics of successful business models, we thus show the importance of entry decisions when launching a business model. Therefore, firms confronted with new, disruptive markets and business models or designing them themselves, will be better able to foresee and predict success and failure in those new market niches. That can be important for both innovators and incumbent firms in order to proactively assess success of entrepreneurial decisions.

Our conceptual development adds to the literature as well. First, we clearly define the concepts of business model and business model innovation, while embedding them in previous contributions of the field. We further build on the conceptualization of the business model as a definition of how value is created (and delivered) for customers and how value is appropriated for the focal firm and its partners. We concur that it is important to keep a system perspective towards the business model, i.e., that it consists of interdependent and complementary decisions that need a holistic

approach. We show that by modelling and theorizing about the main and interaction effects of launch decisions on the business model's value drivers' potential to create and appropriate value, and the apparent interdependencies among those value drivers themselves. We also devote special attention to the important notion that the business model constitutes a separate unit of analysis, different from industry, firm, product, or technology. Discussing the definition and the conceptual foundations of the business model, and its characteristics as a separate unit of analysis, helps us appreciating the relevance to study this concept for both theory and managerial practice. With respect to business model innovation, we posit that to qualify as an innovation, a new business model should materially alter the value creation and appropriation logic of its closest related business model, which is reflected in new content, structure, governance, and/or value driver combinations of the associated activity system. In our conceptualization of business model innovation, we make the case to clearly distinguish between innovations at the product, technology, or business model level. Although they can be linked, they are separate things.

Second, although we follow previous research stating that a business model is different from a product market strategy (Zott and Amit 2008), we provide more information on the conceptual and empirical underpinnings of how to better delineate the differences (but also the interplay) between both the business model and a product market strategy. Business model innovation has an influence on the product market strategy, but product market strategy decision variables also have an influence on the (sustainable) competitive advantage associated with a business model. It implies that the difference between so-called *tactical* product market strategy decisions and *strategic* business model decisions is superfluous. What matters is the empirical and theorized impact of a decision on the performance potential of the underlying concept at hand, albeit a product or a business model. If product market strategy decisions impact (sustainable) competitive advantage of a business model, then they are a relevant part of the business model. We show that decisions such as entry timing, product adaptation, scale of entry, and level of strategic control, that are traditionally only deemed relevant for a product market strategy, have a theorized influence on a business model's value creation, value capture, and combination of value drivers, and an empirically validated influence on a business model's (sustainable) competitive advantage in the form of survival. Our results indicate that the business model, apart from the industry, firm, product, or technology, can provide value and (sustainable) competitive advantage, thereby claiming once more its place in the literature as a separate unit of analysis. Also, with these results and associated theorizing we provide more information on how business model mechanisms work to provide value and influence outcomes.

We suggest that the marketing literature could also benefit greatly from taking the business model as unit of analysis and complementing it with a more traditional focus on products, technologies, firms, or industries. The concept of the business model is in line with the conceptual foundations of marketing. The business model defines how and by whom value is created and captured in exchanges among the focal firm and its factor providers, customers, and other network partners. Exchange is at the foundation of marketing (Bagozzi 1975; Hunt 1983). Also, marketing strategy and various strategic marketing issues are focused on both value creation and value appropriation (Varadarajan 2010). Apart from the contributions already been mentioned above that are also relevant to marketing, this study has another important contribution to the marketing field. We add to the literature by studying market entry in the context of launching a business model

instead of a traditional focus on new products or new markets. Business models are a new unit of analysis, distinct from the product, technology, firm, or industry. Business model innovation is also different from other types of innovation. It is often disruptive for both demand and supply side, and it borrows characteristics from different types of innovations such as radical product innovation, disruptive technological innovation, and architectural innovation. This study shows that the market entry literature is also important at the level of the business model. We indicate that market entry decisions such as timing, scale, adaptation, and control, do not only play a role when launching new products or entering new geographic markets, but also when launching a business model. This can offer a new perspective on market entry decisions, also when applied to entering new product or geographic markets. Because market entry decisions also have an influence on the underlying business model's performance potential, the underlying business model can influence what the outcome will be of particular market entry decisions taken for new product or geographic market entry. Therefore, trying to explain winning versus failing product introductions or new market entries might be put in a different perspective, when also incorporating the underlying business model in the analysis instead of only focusing on product or technology characteristics while not taking into account the influence of entry decisions (or product and technology characteristics) on that same business model.

Policy makers and wider society benefit from this study and its subject for several reasons. First, policy makers benefit from a better understanding of how new markets and disruptive business model innovations operate, spread out and survive. Moreover, with a better understanding of how business models create and capture value, policy makers can make more informed decisions whether it is appropriate to protect incumbent markets or not in the case of business model innovation. For example, considering the case of the free daily newspapers' competitive animosity in the U.K. and Germany, is it acceptable from a society's point of view to allow incumbents use competitive strategies such as introducing spoiler newspapers to derail the market mechanism, or to allow incumbents to abuse the legal system to fight competitors? Another example is whether policy makers with a complete understanding of how value is created and appropriated in a business model like for example that of Amazon and Ryanair, would still focus on the business model's disruptive aspects towards incumbents or on the internal operations of those business models? Second, with our focus on the widespread practice of imitating business model innovations, we can add to the discussion whether to provide possibilities to protect intellectual property derived from the business model. Some firms like Netflix and Nespresso benefit(ed) from partly protection of their business model. No protection might add to examples of business model concealment (Casadesu-Masanell and Zhu 2013) or more ventures applying a strategy of imitation rather than invention, while some form of protection could encourage the emergence of more new business models. Also, at a basic level, partial protection could already foresee in trying to exclude aforementioned strategies of market distortion (cf., the so-called spoiler strategy or abuse of the legal system). However, full protection might be impossible, because sometimes parts of a business model innovation are imitated across industries by non-competing firms with different products or different target customers. For example, the 'razor-razor blade model', i.e., pricing razors inexpensively while aggressively charging for the consumables (razor blades), is also applied as part of the business model of firms like GE and Rolls Royce with respect to jet engines for commercial aircraft that are sold relatively inexpensively while maintenance and parts are the main income sources. Another example is the 'freemium model', i.e., a proprietary product or service provided for

free, while charging for advanced features, functionality, or virtual goods. The freemium model is being applied by Adobe, Skype, LinkedIn, MySpace, amongst many others. Third, given our study's specific context in the media industry which is a very important industry from a policy perspective because of its democratizing character and powerful public information channel, more intelligence on disruptive forces within the media industry are of key informative value to public policy bodies and the general public. The media industry already suffered from several radical changes in recent history, including the advent of online --often free-- content provision, free classified ad websites (e.g., Craigslist), and convergence of various media, internet and telecom players. However, the industry still struggles how to respond adequately to these threats to their existing business.

2.6 Conclusion and Limitations

We conclude by identifying some limitations of our study that offer future research opportunities. First, although the focus of our research required in-depth study of entry and exit dynamics within a particular industry and the free newspaper market is a major industry as evidenced by its rapid international growth, its ability to attract high entrepreneurial activity, and its power to address a large and very different newspaper readership audience, such a focus comes at the cost of loss of generalizability. Future research should therefore replicate the current study in other industries. Also, because we focus on the entry decisions related to a single business model, we could not theorize about possible entry timing effects from business model characteristics like level of appropriability, customer lock-in, and network effects that might be important influencers of post-entry performance. However, we win in terms of limiting across-industry biases. We stimulate further research across industries on this topic to verify whether our main and interaction effects among strategic market entry decisions are applicable across different business models and sectors.

Second, although crucial, survival is only one aspect of firm performance. Moreover, there might be a potential trade-off between legitimacy and performance (Barreto and Baden-Fuller 2006). On the one hand, legitimacy-seeking activities, e.g., peer imitation, can increase an organization's survival probability (DiMaggio and Powell 1983; Meyer and Rowan 1977), while, on the other hand, the likelihood of survival can be obtained at the expense of performance (Henderson 1999). Therefore, it would be great to have trustworthy information on other performance criteria such as circulation throughout time, and advertising revenues and profit from individual newspaper titles. However, these data are very hard to get and difficult to break down at business model level. Overall, survival is seen as a good performance indicator for new ventures. If the new venture is not profitable within a relevant time period (often three years), one will let the venture go, i.e., non-survival. A situation where the venture is not profitable, but one is determined to go through only to hurt competition, is taken into account and controlled for by means of a spoiler dummy. Future research can also further explore whether spoiler tactics are a widespread competitive weapon.

Third, although it has been acknowledged that market entry decisions can have long-lasting performance implications, future research focus might shift towards dynamic managerial decision-making during a launch process, i.e., whether and how managers update their decisions over time after the launch. For example, how can entrepreneurial firms dynamically adapt their strategic decisions such as business model design, scale and strategic control, to improve the odds for success

instead of only focusing on decisions at time of entry. In addition, to get a full grasp of its performance impact, it makes sense to split the effect of market attractiveness across decisions related to market entry, market exit, and the exact timing of these decisions as it could well be that market entry decisions are taken for example three years before actual market entry.

Finally, by focusing on launching strategies, we can stimulate another underexplored aspect of business model innovation, i.e., its diffusion among consumers and across countries, and the potential drivers of that diffusion. Examples include research whether business model innovation differs from other types of innovation in its diffusion characteristics and drivers. Also, are there are financial and/or media bubbles associated with business model innovations and their diffusion. The general enthusiasm on this type of innovation and many market entries (and exits in for example the free newspaper market) suggest there might be some kind of irrational enthusiasm surrounding certain business model innovations.

2.7 Reference list

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2.8 Tables

Table 1: launch decisions' effect on business models' value drivers

	Novelty	Lock-in	Complementarities	Efficiency
Timing	Being first is per definition focusing on novelty. It may also enable (limited) IP protection (e.g., Netflix, Nespresso).	Being first enables starting to create network effects (e.g., Amazon) and switching costs (e.g., iTunes versus Play Store), and pre-empt competition (e.g., The Warehouse versus Wal-Mart).	First access to complementary resources such as supplier and customer co-creators (e.g., Insites Consulting, Chemstation).	Being first enables to increase learning effects, fine-tune operations, and profit from time compression diseconomies.
Adaptation	Adaptations help to adapt to markets (e.g., McDonald's India), to differentiate (e.g., Apple versus Samsung), or to diversify (e.g., McDonald's Arch Deluxe).	Particular product features or components can create lock-in (e.g., car radios, vacuum cleaners) or switching costs (e.g., Apple versus Google apps).	Even small adaptations can be a total misfit with highly complementary systems (e.g., Ryanair in-flight merchandise, McDonald's Arch Deluxe).	Adaptation (versus standardization) is per definition negatively associated with efficiency.
Scale	Scale can enable particular novel activities (e.g., Wal-Mart introducing real-time POS information gathering, linking it to inventory, distribution, and marketing activities through own satellite).	Scale captures network externalities (e.g., Facebook), creates customer and supplier switching costs (e.g., Apple's App store), and pre-empts competition (e.g., Wal-Mart's U.S. expansion in <i>little one-horse towns</i> , McDonald's).	Complementarities may occur only when having a certain scale (e.g., Wal-Mart failing to replicate its strategy in Germany and South Korea).	Scale economies translated in efficiencies in operations (e.g., discounters, no-frills airlines), marketing (e.g., franchising), customer activities (e.g., store within store format), etc.
Control	Strong control avoids leakage of unique resources (e.g., Apple).	Network effects substitute shared control to lock in partners. Shared control creates switching costs for both parties and pre-empts attracting better partners (e.g., Nokia and Windows).	Partners give access to complementary resources, but strong control enables rigid execution to capture complementarities (e.g., Ryanair).	Strong control enforces rigid execution towards strict activity system (e.g., Wal-Mart).

Table 2: free daily newspapers across Europe and Canada

Country	Timing first title(s)	First title(s)	Total entries by end 2010	Total exits by end 2010	Spoilers
Austria	Mar-01	U-Express	8	4	2
Belgium	Oct-00	Metro	1	0	0
Bulgaria	Sep-08	19'	3	2	0
Canada	Jun-00	Metro; FYI Toronto; GTA Today	11	5	0
Croatia	Apr-06	24 sata	2	1	0
Czech Republic	Jul-97	Metro	5	3	0
Denmark	Sep-01	MetroXpress; Urban	11	8	5
Finland	Apr-97	Uutislehti 100	2	1	0
France	Feb-02	Metro; Plus	5	0	2
Germany	Oct-95	Handelsblatt News am Abend	10	9	2
Greece	Nov-00	Metro	4	0	0
Hungary	Sep-98	Metro	2	1	0
Iceland	Apr-01	Frettabladid	3	2	0
Ireland	Oct-05	Herald AM; Metro	3	2	0
Italy	Jul-00	Metro	10	2	1
Latvia	Aug-05	5min	1	0	0
Lithuania	Sep-05	15min	1	1	0
Luxembourg	Oct-07	L'essentiel	2	0	0
Macedonia	May-06	Sphic	1	0	0
Netherlands	Jun-99	Splts	7	3	0
Poland	Nov-00	Metropol	2	1	0
Portugal	Nov-04	Destak	7	3	0
Romania	Jun-05	Expres	5	2	1
Serbia	Sep-06	24 sata	1	0	0
Slovenia	Sep-07	Zurnal24	1	0	0
Spain	Feb-00	Madrid y Mas	13	7	0
Sweden	Feb-95	Metro	6	3	0
Switzerland	Dec-99	20 Minuten/Minutes	9	6	1
Turkey	Feb-08	Gaste; 20dk	2	2	1
UK	Mar-99	Metro	13	9	4
Ukraine	Jun-06	15min	4	4	0

Table 3: descriptives

	Variables:	1	2	3	4	5	6	7	8	9	10	11
1	TIME TO EXIT	1										
2	CENSORING DUMMY	.567*	1									
3	FIRST	.467*	.202*	1								
4	ADAPT	-.263*	-.193*	-.262*	1							
5	SCALE	-.009	-.003	.077	.109	1						
6	SHARED CONTROL	.071	.102	.098	-.080	.051	1					
7	STARTUP	.156	.161	.158	-.066	.021	-.014	1				
8	SPOILER	-.249*	-.094	-.189*	.260*	-.105	-.147	.032	1			
9	DIRECT	-.243*	-.162	-.432*	.221*	-.018	.052	-.060	.228*	1		
10	GDP GROWTH	.006	-.117	.271*	-.211*	.140	-.203*	.062	-.157	-.018	1	
11	AD SPEND	-.065	-.131	.067	-.004	.183	-.025	.048	-.066	-.034	.362*	1
	Key statistics:											
	N	136	136	136	136	136	136	136	136	136	136	134
	MEAN	52.441	.485	.257	.287	.097	.118	.331	.140	.684	2.820	.874
	STD	42.283	.502	.439	.454	.171	.323	.472	.348	.467	2.417	.334
	MIN	3	0	0	0	.000	0	0	0	0	-6.062	.310
	MAX	190	1	1	1	1.250	1	1	1	1	9.252	2.160

Significance level: *.05

Table 4: frequency tables

FIRST	ADAPT	Frequency	Percent
0	0	65	47.79
0	1	36	26.47
1	0	32	23.53
1	1	3	2.21
		136	100
FIRST	SHARED CONTROL	Frequency	Percent
0	0	91	66.91
0	1	10	7.35
1	0	29	21.32
1	1	6	4.41
		136	100

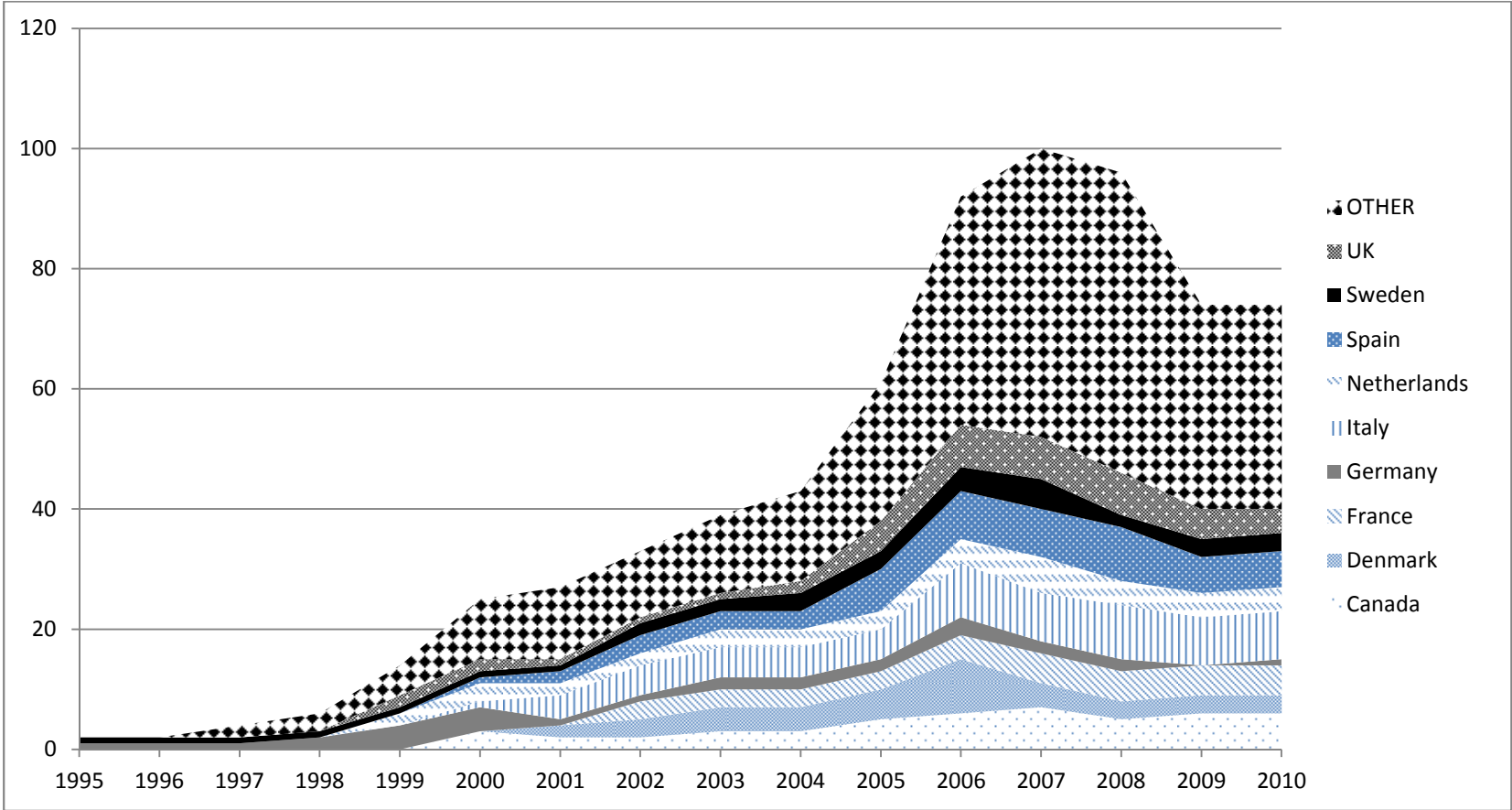
Table 5: results Cox PH models

	Model 1		Model 2		Model 3		Model 4		Model 5	
<i>Variables:</i>	PE	SE	PE	SE	PE	SE	PE	SE	PE	SE
FIRST (H1: -)			-1.047**	.011			-.098	.587		
ADAPT (H2a: +)			.564**	.047			.515*	.287	.590**	.283
SCALE (H3a: -)			-.305	.646	-.297	.657	-.035	.644	-.339	.674
SHARED CONTROL (H4a: +)			.133	.772	.133	.455	.095	.465		
LATE&ADAPT (H2b)					1.656****	.493				
LATE&NOT ADAPT (H2b)					.968**	.412				
FIRST*SCALE (H3b: -)							-13.597*	7.545		
LATE&SHARED CONTROL (H4b)									1.408**	.625
LATE&NO SHARED CONTROL (H4b)									1.010**	.410
STARTUP	-.532*	.278	-.390	.165	-.377	.281	-.306	.281	-.372	.283
SPOILER	.653*	.340	.342	.340	.295	.360	.397	.361	.358	.359
DIRECT	.638**	.296	.127	.712	.064	.347	.033	.336	.113	.341
GDP GROWTH	.081	.065	.131**	.045	.127*	.065	.134**	.067	.135**	.065
AD SPEND	.781**	.398	.764*	.059	.803**	.409	.827**	.416	.739*	.404
<i>Fit statistics:</i>										
AIC	608.143		604.508		603.294		601.712		604.000	
Likelihood ratio	18.407***		30.042****		31.2561****		34.8377****		30.5500****	

PE: parameter estimate; SE: standard error; Significance level (two-sided tests): *.10 ; **.05; ***.01; ****<.001

2.9 Figures

Figure 1: Free daily newspapers across Europe and Canada



Study 3 Learning and Signals Across Firms and Markets: Identifying Entry Spillover Types and Moderators

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3.1 Abstract

Marketers have to anticipate and respond adequately and timely in increasingly complex and fast-paced markets. Therefore, they need to scan their environment for market and competitive information. However, relevant information can be very scarce and often not readily available, especially in times of market upheaval. In such situations of high uncertainty, firms can only learn from own, previous experiences or rely on information signals from other firms' behavior. We study learning and signals across firms and markets in a context of high uncertainty for incumbents. In our study's context, the incumbents are paid daily newspaper publishers across 14 European countries who need to decide when to enter a new market niche, i.e., the free daily newspaper market niche. We model entry spillover, i.e., previous market niche entries that influence a focal market niche entry decision. We identify different types and moderators of entry spillover. We model incumbents' time to enter the new market niche using a Bayesian hazard model that accounts for non-monotonic event rates, non-linear, heterogeneous, and asymmetric spillover effects, and a permanent survival fraction. We estimate our model through a Markov-Chain Monte-Carlo procedure using Metropolis-Hastings algorithms. We find that incumbents' entry timing is not only influenced by entry spillover across competing firms, but also by entry spillover across non-competing firms in different markets. Also, we show that entry spillover is non-linear, heterogeneous, and asymmetric while being moderated by important firm and market characteristics. We discuss important contributions for both managerial theory and practice.

Key words: Bayesian, hazard, niche entry, scanning, spillover

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3.2 Introduction

Innovative business ideas and technologies creating new market niches in an industry are increasingly occurring. These market niches can pose significant threats for complacent and passive incumbents. Random examples include mobile payment solutions by *Simple* and *Google Wallet* competing with traditional banking payment systems, and call services over the Internet by *Skype* and *Google Voice* threatening traditional telecom fixed-line carriers. Deciding when to enter such a new market niche is far from easy for incumbents. Entry timing can have important short- and long-term performance implications (Gielens and Dekimpe 2001; Green, Barclay, and Ryans 1995). However, incumbents face severe financial and managerial risks related to a lack of information on the new market niche. Often, there is a lack of information with respect to the rewards of the new market niche, its potential cannibalization of existing revenue streams and disruption of the existing customer base, retaliations from incumbent competitors when entering the new market niche, etc. However, with the Internet, smartphone, and social media use everywhere, geographically dispersed information is increasingly and instantly available. On the one hand, it can help managers finding the appropriate information in a timely manner to take good decisions. On the other hand, it creates an instant and uncontrollable wealth of information signals that might be appropriate, but also inappropriate, for the decision at hand. Managers need to structure all possible information signals to capture the essence.

Therefore, firms --now, more than ever -- need to adequately scan their environment to actively search and especially structure information to prepare, guide and defend their decisions. Environmental scanning is the means through which managers perceive external events and trends (Culnan 1983; Hambrick 1982). It has the task of reducing perceived strategic uncertainty (Daft, Sormunen, and Parks 1988). Various literature streams suggest that environmental scanning is important for firms to create and sustain a competitive advantage. Previous research on market orientation (Hult, Ketchen, and Slater 2005; Kohli and Jaworski 1990), absorptive capacity (Cohen and Levinthal 1990), dynamic capabilities (Teece 2007), and organizational vigilance (Day and Schoemaker 2006; Fiol and O'Connor 2003; Levinthal and Rerup 2006) all suggest that firms should actively scan their environment to identify, anticipate, and respond adequately to market opportunities or threats. Also, scanning can provide a firm with an information advantage based on the firm's ability to perceive important signals in its environment before competitors do (Dutton and Freedman 1984). Moreover, scanning is also gaining importance because there are more and more situations where there are problems of data overload and accelerated market complexity (Day 2011).

Previous research on scanning focuses on developing and managing an adequate scanning system, describing scanning activities based on scanning mode, frequency, scope, and top management involvement, and studying the alignment between environmental characteristics and a firm's scanning system design (e.g., Aaker 1983; Aguilar 1967; Culnan 1983; Daft et al. 1988; Elenkov 1997; Hambrick 1982; Hambrick and Mason 1984; Yasai-Ardekani and Nystrom 1996). However, there are two important remaining gaps in the literature that make it difficult for firms to adequately scan their environment, especially when the information is geographically dispersed and firms lack time and money to conduct extensive scanning activities. First, previous research on scanning seems to assume that the relevant environmental boundaries coincide with the product-geographic scope of the firm (Yasai-Ardekani and Nystrom 1996) or with the perceived impact of events on a firm's

own performance (Aaker 1983; Daft et al. 1988; Pfeffer 1978). However, with increasingly global competition and blurring industry boundaries, a firm's relevant threats and opportunities also come from outside its current product-geographic scope. It implies that the relevant geographic environment to scan might be much broader than what initially is expected. Second, whereas previous research focuses on listing all possible information sources and stressing the importance of applying a broad scanning scope with high frequency when uncertainty is high, little is known on what information sources are actually influencing firms' decisions. Consequently, previous research provides little help for firms how to grasp what information signals in its environment are most relevant, especially when these firms have limited resources but ever increasing data dispersion and complexity.

Therefore, instead of merely focusing on a firm's currently served product-geographic environment and on signals' potential influence on firm decisions, we study what information signals actually influence a focal industry incumbent's decision when to enter a new market niche and how these signals influence that decision, while taking into account signals from both served and non-served geographic environments. We focus on information signals related to previous market niche entries. We define entry spillover as signals related to a previous market niche entry by a particular firm in a particular market that influence the focal firm's decision on when to enter that market niche in a focal market. Scanning here involves gathering and monitoring information on previous market niche entries. A market niche entry is done by a particular firm in a particular market. Therefore, we can relate information signals from previous market niche entries to both firms and markets, and their respective characteristics.

Previous research suggests there is entry spillover that takes place within firms across markets, and entry spillover that takes place across firms within markets. Firms can search within their firm boundaries for information and own experiences with the new market niche in other markets. For example, firms use entry experiences in similar markets to guide focal entry decisions (Mittra and Golder 2002). The theory on multinational enterprises specifically states that firms active in multiple markets build one organization in order to transfer knowledge more efficiently across markets (Kogut and Zander 1993; 2003). However, it can be hard to transfer knowledge internally (Aaker 2008; Szulanski 1996). Also, previous experience is often not available in case of early-stage market niche development and only focusing on internal knowledge can seriously bias a firm's market assessment. However, firms can also look outside their firm boundaries for information related to market niche entries. Previous research suggests that firms look at competitors' entries as signals of market attractiveness to guide a focal market entry decision (Bowman and Gatignon 1995; Gielens and Dekimpe 2007; King and Tucci 2002). Also, so-called *fad theorists* claim that information about how many adopters there are and who specifically has adopted the innovation, rather than information about the innovation itself, generates social pressure for a firm's decision-makers to conform to imitation behavior (Abrahamson 1991; Aldrich and Fiol 1994; Fiol and O'Connor 2003).

However, there are at least two important research gaps remaining which impedes a more elaborate understanding of entry spillover. First, previous research only identifies entry spillover within firms across markets (cf., internal knowledge transfer of own, previous niche entries in other markets) and entry spillover across firms within markets (cf., competitive imitation behavior). However, why would there not be a third type of entry spillover that takes place across firms across

markets? Neglecting information signals from other firms in other-than-focal markets might harm and slow down a firm's entry decision, because it leaves out potentially important and early information while also focusing too much on knowledge about current markets and competition. Also, previous research does not study different types of entry spillover together. That can introduce a bias in terms of the importance and effect of the different types of entry spillover on the focal entry decision. Second, previous research indicates that entry spillover can differ in strength. For example, firms can transfer knowledge more easily across similar markets (Gielens and Dekimpe 2007; Mitra and Golder 2002) and firms are more inclined to imitate similar firms (Debruyne and Reibstein 2005). However, there can be other dimensions than similarity that moderate entry spillover. For example, spillover strength could differ also depending on characteristics of the sender and the receiver of the information signal, which is a common assumption in the signaling literature. It implies that other firm and market characteristics could simultaneously influence entry spillover. Also, it implies that entry spillover might not be -- as often assumed -- symmetric, i.e., that the influence of firm A on firm B is not equal to the influence of firm B on firm A. Neglecting other spillover dimensions, possible asymmetry of spillover effects, and not simultaneously taking into account different firm and market characteristics that could moderate entry spillover, can introduce a bias when modelling entry spillover.

In sum, the following research questions are remaining. First, what are the different types of entry spillover and do they influence entry timing differently? Second, how do different types of entry spillover influence entry timing? Third, what firm and market characteristics moderate entry spillover across firms respectively markets? We address these literature gaps and research questions as follows. Based on theoretical and practical observations, we present a conceptual and empirical model to identify different types of entry spillover and different market and firm characteristics that moderate entry spillover. We model when incumbents enter a new market niche based on previous market niche entries. Our Bayesian hazard model accounts for a possibly non-monotonic event rate, a permanent survivor fraction, and potentially asymmetric spillover effects. We estimate the model using a flexible Markov Chain Monte Carlo (MCMC) method known as the Metropolis-Hastings (MH) algorithm. This algorithm allows us to generate samples from the posterior distribution without the form of the posterior density being known analytically. The context involves incumbent publishers of paid daily newspapers that are confronted with a new market niche, i.e., the free daily commuter newspaper market (e.g., *Metro*, *20 Minutes*). We collected data on 163 incumbent newspaper publishers in 14 European markets for the period 1995-2010. The unit of analysis is the incumbent publisher-market combination.

Our study contributes to managerial theory and practice. We add to various literature streams. First, we contribute to the literature on scanning by showing which information signals actually (instead of potentially) influence a firm's decision while taking into account signals from both served and non-served geographic environments. Thereby, we shift the attention from the scanning system, its characteristics, and its usage, towards the possible impact of a scanning system in firms' decision-making. Second, we extend signaling theory by identifying the co-existence of both direct and indirect signals related to market entry. Direct signals are tied to the market of interest or direct competitors, whereas indirect signals are tied to non-focal markets or non-competing firms. Prior research on signaling focuses on direct signals. Market entry spillover across firms across markets suggests that indirect signals can still be meaningful, i.e., that these indirect signals can still influence

firm decision-making. Moreover, we detect firm and market characteristics that increase signal strength and we model the influence of signals on firm behavior more realistically taking into account characteristics of signal senders and receivers. Third, our hazard model has several characteristics to create more realistic models for empirical research on market entry timing. We allow for non-monotonic event rates to allow for models closer to empirical settings, asymmetric effects to include more realistic spillover models, and permanent survivor fractions that follow common sense that not all incumbents always enter new market niches. Moreover, our model is highly flexible and uses publicly accessible data.

We add to managerial practice by identifying relevant dimensions of firm scanning activities and how these can influence firm decisions in a complex and uncertain market context. Thereby, we develop a framework helping firms to detect not only strong signals from close competitors, but also relevant, weak signals on the periphery of a firm's scanning activities. It implies that firms confronted with new market niches will be better able to foresee and predict whether, when and where incumbents will react. That can be important for both innovators and incumbent firms in order to proactively assess competitive behavior and evolutions in the industry. Also, our results on what firm and market characteristics are driving entry spillover, will benefit managers through knowing better how to organize scanning activities and gather industry intelligence in terms of what markets and firms to watch for competitive and industry-specific information, without creating data overload.

Our paper proceeds as follows. First, we develop our conceptual framework and hypotheses. Second, we specify our study context. Third, we clarify our model specification and estimation procedure. Fourth, we show our data collection and variable operationalization. Fifth, we report results and discuss our findings. We conclude with some limitations of this study and opportunities for future research.

3.3 Conceptual development

3.3.1 Scanning and entry spillover

Firms need to identify, anticipate and respond to market opportunities and threats to build and sustain a competitive advantage. Environmental scanning is used by managers to identify and capture information on external events and trends that can lead to a market opportunity or threat for a firm (Culnan 1983; Hambrick 1982). Scanning has the task of reducing perceived strategic uncertainty with respect to these external events and trends (Daft et al. 1988). Also, scanning can provide a firm with an information advantage when it lets a firm perceive important information signals in its environment before competitors do (Dutton and Freedman 1984). Moreover, with accelerated market complexity in many industries and problems of data overload, scanning can serve a firm by enabling it to cope with uncertainty and change (Day 2011). Scanning activities underlie particular firm capabilities that are considered key for long-term organizational performance and survival. For example, scanning is an essential part of a firm's market orientation (Hult et al. 2005; Kohli and Jaworski 1990), absorptive capacity (Cohen and Levinthal 1990), and

dynamic capability (Teece 2007). Market-oriented firms are expected to have increased short-and long-term performance (e.g., Kumar et al. 2011). Increased absorptive capacity enhances a firm's capability to identify and appreciate market opportunities. It enhances a firm's capability to enter new markets (Danneels 2008) and its profitability (Narasimhan, Rajiv, and Dutta 2006). A firm's dynamic capability has been related to a firm's long-term performance and survival, especially when a firm's environment is in serious upheaval (e.g., Helfat et al. 2007; Teece 2007; Teece, Pisano, and Shuen 1997).

Firms build a scanning system to adequately identify and capture information signals related to external events or trends (e.g., Aaker 1983). Important decisions firms need to take are how they build and manage their scanning system. For example, firms differ with respect to scanning mode or information sources, scanning frequency and scope, and top management involvement (e.g., Aaker 1983; Aguilar 1967; Culnan 1983; Daft et al. 1988; Elenkov 1997; Hambrick 1982; Hambrick and Mason 1984; Yasai-Ardekani and Nystrom 1996). Firms focus in their scanning activities on environmental events or trends that have an impact on their own performance (Aaker 1983; Daft et al. 1988; Pfeffer and Salancik 1978). Otherwise, scanning activities could become far too expensive and difficult to manage. However, because of this focus on events or trends with an impact on the own performance, firms could define their relevant environment, in which they scan for information signals, narrowly, i.e., coinciding with the product-geographic scope of the firm (Yasai-Ardekani and Nystrom 1996). However, when a new market niche in an industry has been created, such a narrowly defined environment could be harmful. With the advent of a new market niche, incumbents' uncertainty is high. There is high uncertainty with respect to the new market niche's revenue potential, possible cannibalization, disruption likelihood of the existing customer base, retaliations from incumbent competitors towards firms entering the new market niche, etc. However, a new market niche can originate from anywhere so that information on the new market niche is often not readily and easily available within a firm's product-geographic scope. Waiting for information signals within its environment that can have a performance impact can be harmful. For example, when there are important first-mover advantages related to the new market niche. Also, indirect competitors outside a firm's current product-geographic market scope can turn into direct competitors in the future, especially with increasing globalization.

Therefore, we argue that firms broaden the scope of their scanning activities when there is a new market niche in the industry. Scanning then involves gathering and monitoring information related to all previous entries in the new market niche, both in- and outside the firm's current product-geographic market scope. Entry spillover occurs when signals from a previous market niche entry by a particular firm in a particular market influence the focal firm's market niche entry decision in a focal market. Such spillover effect takes place because firms use information on previous market niche entries to reduce the uncertainty and risk involved with their own possible market niche entry. Whereas scanning refers to information gathering and monitoring with a *potential* effect on firm decision-making, spillover refers to *actual* effects of information signals on firm decisions.

We suggest there are three different types of entry spillover based on the two main information dimensions firms relate to a market niche entry, i.e., information tied to the entering firm and information tied to the market. First, there can be entry spillover within firms across markets. Firms can search within their organization for information and experiences related to own, previous

entries in that market niche in other markets. Previous market niche entries by the firm add to its learning and knowledge about that specific market niche and how to enter market niches in general. A firm's capabilities, also market entry capabilities, are built through learning by doing (Helfat and Lieberman 2002; Levitt and March 1988; Zollo and Winter 2002). Also, once a firm built valuable resources to adequately perform a capability (e.g., technological and customer knowhow to be used in a market entry capability), a firm can re-use these resources when redeploying that capability in a related situation (e.g., Danneels 2007; Penrose 1959). It implies that firms actively apply knowledge on previous market niche entries for subsequent entries. For example, entry experiences in markets culturally, economically and geographically close to a focal market can speed up entry in that focal market (e.g., Gielens and Dekimpe 2007; Mitra and Golder 2002). Also, once incumbents are convinced to enter a new market niche in one market, they need less time to decide on a subsequent market niche entry in another market, because they have more information and knowledge on potential financial and managerial risks involved. Moreover, a firm organizes itself across market borders in one enterprise to transfer knowledge more efficiently across markets (Kogut and Zander 1993; 2003). It implies that there are knowledge streams within firms across markets that can influence subsequent firm decisions. This learning behavior within firms across markets related to market niche entry decisions reflects a first type of market entry spillover.

Second, there can be entry spillover across firms within markets. Firms look outside their firm boundaries for information, because it can be hard to transfer knowledge internally (Aaker 2008; Szulanski 1996), and because own previous experience is often not yet available in case of early-stage market development. Under uncertainty, decision makers may turn to others' behavior as a signal of the value of an action (Gilbert and Lieberman 1987). Market entries by competitors signal market attractiveness which can lead to contagion or imitation behavior among firms (Kennedy 2002). Also, market niche entries by competitors create social pressure among managers to also enter. In a similar vein, information about how many adopters there are and who specifically has adopted the innovation, rather than information about the innovation itself, generates social pressure for a firm's decision-makers to conform to imitation behavior (Abrahamson 1991; Aldrich and Fiol 1994; Fiol and O'Connor 2003). In the process of contagion, each adoption of a new practice or product makes the subsequent adoption from a potential adopter more likely (Burt 1987). At an aggregate market level, population growth models claim that increased entry into a new market attracts new entry in turn (Gort and Konakayama 1982; Hannan and Freeman 1977; Lambkin and Day 1989). Besides contagion of managerial decisions across firms, contagion has also been documented extensively as a dynamic behind the diffusion of new products (Bass 1969; Rogers 1995). It suggests that firms tend to look at competitors' entries to guide a focal entry decision (Bowman and Gatignon 1995; King and Tucci 2002). Such entry imitation behavior among firms reflects entry spillover across firms within markets. Prior empirical research shows the existence of such entry spillover with respect to entry timing (e.g., Debruyne and Reibstein 2005; Gielens and Dekimpe 2007).

Third, whereas previous research focuses on direct entry spillover, i.e., spillover within firms across markets or spillover across firms within markets, we argue there can also be indirect entry spillover across firms across markets. Both empirical and theoretical observations suggest the existence of such indirect entry spillover across firms across markets. Organizational theory establishes that firms learn from own experiences and other firms' experiences (Levitt and March

1988). It has been suggested that the ability of firms to learn from each other is not noticeably restricted by national markets (Baldwin and Krugman 1988), i.e., that international inter-organizational learning networks might exist (Tregaskis 2003). Indeed, if knowledge transfers exists across firms within markets, it is hard to imagine there can be no such transfers across firms across markets. Especially, when there are more and more cultural exchanges, and increasing trade and better communication across markets. For example, prior research at aggregate market level shows contagion effects across different markets with respect to the adoption of organizational practices such as ISO certifications (Albuquerque, Bronnenberg, and Corbett 2007). Research in the semiconductor industry even indicates that learning spills over just as much between firms in different markets as between firms in a given market (Irwin and Klenow 1994). Although 'local' spillover still seems more important than 'distant' spillover, previous empirical studies in economics show a substantial amount of evidence of knowledge spillover across markets (Keller 2002).

Also, increasingly, firms become internationally active in multiple markets. Not only firms from developed economies, but also *distant* firms born in emerging economies enter different markets worldwide. For example, over the past decade, the number of parent companies from emerging economies, such as Brazil, China, and India, increased from less than 3,000 to more than 13,000 (UNCTAD 2006). Therefore, incumbents should anticipate market entries by firms that are yet unknown because operating in different markets, and start monitoring them. Also, higher international presence implies that competitors are finding themselves more and more in overlapping markets (Gielens, Helsen, and Dekimpe 2012). The higher the number of overlapping markets between competitors, the more multimarket competition and the more competitive effects across markets can occur. Multimarket competition refers to situations in which the same firms compete against each other in multiple markets (Jayachandran, Gimeno, and Varadarajan 1999). Moreover, increased multimarket contact between two firms implies that these firms become more interdependent, which means that the outcome of one firm's actions becomes more contingent upon competitive actions and reactions of the other firm. Also, when firms collect information on competitors, competitors encountered in multiple markets are likely to receive more attention than those encountered in fewer markets, even for information from those markets that are not yet overlapping. Whether multimarket contact leads to more (Porter 1980), less (Bernheim and Whinston 1990; Feinberg 1985), or more strategic competition (Kang, Bayus, and Balasubramanian 2010), all outcomes imply that firms monitor multimarket competitors more than other competitors.

We hypothesize the following.

- H1a: Entry spillover within firms across markets decreases entry timing.
- H1b: Entry spillover across firms within markets decreases entry timing.
- H1c: Entry spillover across firms across markets decreases entry timing.

3.3.2 Moderators of entry spillover

When firms scan previous market niche entries, they need to structure all these information signals to capture the essence. We argue that firms focus on information signals from particular firms in particular markets more than from other firms or markets. We suggest that entry spillover is heterogeneously distributed across firms and markets. Heterogeneous entry spillover means that entries by firm F1 (in market M1) have more or less influence on subsequent entries by other firms

(in other markets), than entries by firm F2 (in market M2). Also, we suggest that entry spillover is asymmetric. Asymmetric spillover means that entries by firm F1 (in market M1) can have more or less influence on entries by firm F2 (in market M2), than that entries by firm F2 (in market M2) have on entries by firm F1 (in market M1).

There are several theoretical and empirical arguments to suggest heterogeneous and asymmetric entry spillover. First, heterogeneous and asymmetric entry spillover is in line with signaling theory. It states that signals can have different strength (Lampel and Shamsie 2000; Sorescu, Shankar, and Kushwaha 2007). Signal strength depends on the signaling environment (Janney and Folta 2006; Park and Mezias 2005) and on sender characteristics such as being observable and credible (Busenitz, Fiet, and Moesel 2005; Certo 2003; Lampel and Shamsie 2000; Ramaswami et al. 2010; Warner, Fairbank, and Steensma 2006). Moreover, different receivers process signals differently (Fischer and Reuber 2007; Gulati and Higgins 2003). Second, research in competitive strategy suggests that spillover effects across firms are not homogeneously distributed. A firm's decision makers construct mental models of their industry in which they categorize competitors in different groups (Porac and Thomas 1990). Firms in the same competitive group as the focal firm get more attention and are more subject to imitation from the focal firm's decision makers than firms outside that group. Moreover, the more uncertainty surrounds a decision, the more peer comparison becomes a guide (Haunschild and Miner 1997). For example, research in the U.S. online brokerage industry shows that firms are more inclined to imitate market niche entries by competitors that are similar in size and resources (Debruyne and Reibstein 2005). Also, firms seem more likely to imitate competitors that are successful in terms of profits or size (Haveman 1993). Moreover, previous research shows that competitive rivalry is asymmetric, i.e., a given pair of firms may not pose an equal threat to each other (e.g., Chen 1996; Gielens et al. 2008). Third, spillover effects across markets seem heterogeneously and asymmetrically distributed for at least two reasons. First, a firm's local knowledge is said to be *sticky*, i.e., difficult to transfer within the firm across markets (Jensen and Szulanski 2004; Szulanski 1996). However, local knowledge and experiences are easier to transfer to markets close in terms of culture, demography, economy and geography (e.g., Gielens and Dekimpe 2007; Mitra and Golder 2002). Second, innovations diffuse not homogeneously across markets (Dekimpe, Parker, and Sarvary 2000; Ganesh and Kumar 1996). For example, spillover effects across markets with respect to the probability for new product takeoff, suggests that these spillover effects are heterogeneous and asymmetric based on markets' demographic, economic and geographic characteristics (van Everdingen, Fok, and Stremersch 2009).

To structure entry spillover's heterogeneity and asymmetry, we split a spillover process in three main dimensions. For every spillover, there is a source, a receiver, and a distance to overcome. The source firm is the firm that enters the new market niche previous to a focal firm's decision and the source market is the market in which that source firm enters that new market niche. The receiver firm is the focal firm and the receiver market is the market in which the focal firm might enter the new market niche. The distance to overcome is the physical or mental distance between source and receiver firm, or between source and receiver market. The spillover dimension related to the source is 'sphere of influence' of the source towards potential receivers. Sphere of influence embodies how well senders of information are able to capture the attention of potential receivers with respect to the information that is conveyed. The spillover dimension related to the receiver is 'receptivity' of the receiver towards external information. Receptivity embodies how well potential receivers of

information are able or open to capturing information. The spillover dimension related to distance to overcome is the 'proximity' between senders and receivers. We argue that sphere of influence, proximity and receptivity enhance entry spillover and decrease a focal incumbent's time to enter the new market niche.

We identify several firm characteristics that can influence firms' proximity, sphere of influence, or receptivity. First, we argue that familiarity and similarity between a pair of firms increase their proximity. We relate market contact and resource similarity to firms' familiarity respectively similarity. Firms are familiar with each other through market contact in one or more markets. Firms watch familiar firms' actions more closely than those of less familiar firms. For example, firms with heavily overlapping market presence are often found in situations with increased imitation of product introductions (Kang et al. 2010; Young et al. 2000). Also, in case of multimarket contact, foreign competitors can influence local firms' entry behavior (Kang et al. 2010). With respect to similarity, firms can be similar through their resource bundles in terms of both size and type (Chen 1996). Firms are likely to watch actions of firms with similar resources more closely (Porac and Thomas 1990). Previous research indeed shows that firms are more likely to imitate competitors with similar resources when entering new market niches (Debruyne and Reibstein 2005). Also, fellow incumbents are more likely to watch other incumbents not only due to similar resource bundles, but also because of shared history and possible competitive interactions. Moreover, previous research indicates that incumbents' performance in a new market niche is more related to other incumbents' entry order, rather than to the overall entry order (Mitchell 1991; Narasimhan and Zhang 2000). Second, market leaders have a higher sphere of influence towards other firms. Market leaders are more easily observable and socially prominent which makes their market entries more likely to be watched and hence imitated (Greve 2000). Also, market leaders have the power to signal what the direction of the industry should be and what behavior of other industry participants is expected (D'Aveni 1999). Moreover, established firms and especially market leaders who enter a particular new market create substantial legitimacy for that new market (Navis and Glynn 2010; Rao, Chandy, and Prabhu 2008). Third, a firm's receptivity to being influenced by other firms' actions depends on its ability to capture signals and its ability to respond. We relate firm size to a firm's ability to capture signals and its ability to respond. Receivers' attention is linked to the intensity of their scanning activities (Connelly et al. 2011; Gulati and Higgins 2003; Janney and Folta 2006). Firm size has a positive influence on the frequency of scanning activities (Yasai-Ardekani and Nystrom 1996). A higher frequency of scanning the environment increases a firm's ability to capture signals and develop more knowledge. A firm's ability to respond refers to the capacity of its available resource bundle to react appropriately. Larger firms typically have more resources to react. Previous research shows that in a context of destabilization of current business, a larger size of the incumbent firm results in a higher ability to react (Aboulnasr et al. 2008). However, larger firms might also take their time to react because of structural inertia (Hannan and Freeman 1984; Kuester, Homburg, and Robertson 1999) or because they have a higher capacity to withstand a threat (Gielens et al. 2008). Therefore, we hypothesize the following.

H2a: Firms' proximity amplifies market entry spillover across firms.

H2b: A firm's sphere of influence amplifies market entry spillover across firms.

H2c: A firm's receptivity amplifies market entry spillover across firms.

We identify several market characteristics that can influence markets' proximity, sphere of influence, and receptivity. We focus on economic, demographic, cultural and geographic market characteristics. First, we expect that cultural similarity, language similarity, geographic proximity, and economic similarity increase the proximity between a pair of markets. Previous research shows that influences across markets can be moderated by market similarity and economic relations (Albuquerque, Bronnenberg, and Corbett 2007). Also, people with similar cultural values and a similar language will be more inclined to speak to each other, read about the other and exchange information. People communicate more easily when they share a common cultural background (Ganesh, Kumar, and Subramaniam 1997; Kumar and Krishnan 2002; Rogers 1995; Takada and Jain 1991). Moreover, we expect that the more geographically distant markets are, the weaker the international spillover is between them. Geographical proximity of rivals facilitates transfer of ideas and imitation (Albuquerque et al. 2007), and is shown to be linked to knowledge spillover, innovative activity, and firm development (Audretsch and Feldman 1996). There are also stronger networking possibilities between firms within geographic clusters. For example, previous research finds so-called *neighborhood effects* (Mahajan et al. 1979) and spatial clusters in adoption phenomena (Garber et al. 2004). Second, we expect that the larger a market's GDP, export size, and population size are, the larger the market's sphere of influence is. Markets with a lot of inhabitants, large GDP or important export activities such as the U.S.A. and China, have a high visibility and economic power towards other markets in the world. Trends and evolutions in these important markets are being watched and followed more closely from abroad. Also, people in more open, export- or import-oriented economies, are better able to share information with foreigners relative to people from more closed economies, thanks to more relationship heuristics they developed (Wuyts et al. 2004), e.g., the way to conduct business with a market (Beise 2004). Third, we expect a larger market susceptibility when a market has a smaller GDP, larger import activities, and higher population density. Economic smaller markets and open, import-oriented markets are less self-centered, and more depending upon (and thus more inclined to watch) what happens in other markets. Foreign information can more easily penetrate the social system in densely populated markets (Lemmens, Croux, and Dekimpe 2007; Mitra and Golder 2002). Also, people in dense markets are close to each other physically, which may stimulate them to communicate. Therefore, we hypothesize the following.

H3a: Markets' proximity amplifies market entry spillover across markets.

H3b: A market's sphere of influence amplifies market entry spillover across markets.

H3c: A market's receptivity amplifies market entry spillover across markets.

3.3.3 Control variables

We control for several other factors that can explain entry timing. First, we control for firm size. Firm size is often treated both as a proxy for market power and structural inertia. Firm size has been associated with market power in both domestic and international contexts (Vibha, Yigang, and Gerardo 2002). Large firms may be less financially restricted and more influential towards local authorities for obtaining access to unique distribution facilities (e.g., subway stations). Also, more financial resources provide a buffer against the risk of entering a new market niche. However, bureaucratic tendencies from greater structural complexity and formalization can lead to increased inertia which negatively affects a firm's ability to react swiftly to new opportunities. Therefore,

although it is important to control for firm size, it is difficult to predict its impact on market entry timing (Gielens and Dekimpe 2007).

Second, we control for previous failures in the new market niche. The perception of risk to enter a market niche is closely related to previous failures in that market niche. The underlying reasons of those failures (e.g., competitive rivalry, inefficient operations, etc.) are often unknown to other than the failed firm itself and are thus hard to disentangle. We consider previous failures in the new market niche as flow signals at aggregate market level that are important to signal the quality of a possible entry. In a similar vein, Dekinder and Kohli (2008) showed that flow signals at firm level, i.e., a pattern of signals over multiple periods, can be important signals for the quality of start-up firms. The more market niche entries that failed to survive, the riskier a market niche entry seems, and the longer an incumbent will want to wait before entering.

Third, we control for a focal market's attractiveness that is expected to increase the incumbent's time till entering the market niche. Market attractiveness is related to various economic and demographic characteristics such as economic wealth and growth, and market potential. It seems counterintuitive to expect a positive effect between market attractiveness and entry timing. However, given that market attractiveness is positive for both the incumbent market and the new market niche, and the complex and potentially grave effects of market niche entry on the incumbent business, incumbents are expected to adopt a wait-and-see approach when market attractiveness is high.

Figure 1 summarizes our conceptual framework. We model how previous market niche entries influence a focal market niche entry by a particular firm in a particular market. Thereby, we distinguish between different types of entry spillover and include different moderators of entry spillover.

3.4 Context

The context of our study is the advent of a new market niche in the incumbent daily newspaper industry. An innovative business idea by *Metro International* in Stockholm (Sweden) leads in February 1995 to a new type of daily newspaper which is the start of a new market niche in the daily newspaper industry. The main characteristics of the innovative newspaper are the following. First, consumers can take the daily newspaper for free instead of paying a subscription or per-issue fee. The newspaper is ad-sponsored which means that ad revenues are the only revenue stream for the publisher. Second, the free newspaper appears daily, i.e., at least four times a week. It is also considered a newspaper, i.e., it contains considerably more information content than advertising content. Third, the free newspaper is mainly distributed in high-traffic commuter zones and in public transportation systems, e.g., through self-service racks or by hand distributors in railway, subway, and bus stations. Its target consumers are daily commuters using public transportation.

We study whether and how entries in the new market niche by both paid newspaper incumbents and new entrants in the industry influence the entry timing of incumbent publishers of paid newspapers in the new market niche of free daily newspapers. In many European countries

both paid newspaper incumbents and new entrants enter this new market niche opportunity. In 2000, there are 29 free daily newspapers in 14 European countries with an estimated circulation of 5.5 million copies, and in 2005, there are already 81 free daily newspapers in 24 European countries with an estimated circulation of 15.4 million (Bakker 2008). The *Metro* phenomenon is not restricted to Europe though. Since January 2000, *Metro* is also distributed in Philadelphia, Boston and New York, and since June 2000, *Metro* appears in Canada. Moreover, free daily newspapers are present in Latin America, Asia, Australia and Africa. Bakker (Bakker 2008) counts 247 free daily newspapers in 56 countries worldwide with a daily circulation of 44 million copies at the end of 2007.

This context is interesting and appropriate for several reasons. First, ad-sponsored market niches like the free daily newspaper market niche are highly visible, relatively easy to imitate, and with low entry barriers. Therefore, incumbents' entry is based on strategic considerations rather than tied to technological capabilities. Second, the free daily newspaper idea creates much fear and uncertainty among incumbent paid daily newspaper publishers about its impact on incumbent revenue streams and about its own viability for long-term survival. It also contains important first-mover advantages in distribution. First-movers can use the railway system to display their free daily newspapers in racks in stations thanks to often exclusive agreements with public transportation authorities, whereas late-movers need to use people who hand out the free daily newspapers in the street, are forced to distribute in alternative locations with less traffic (e.g., racks in office or apartment buildings), or have to deliver the newspaper to people's homes. Moreover, the idea of free daily newspapers expands internationally in a relatively short period of time. Third, low-cost formats have important social, competitive, and economic impacts (Gatignon and Anderson 2001; Singh, Hansen, and Blattberg 2006). The advent of free daily newspapers concerns many different stakeholders. There are the media companies that already suffered from several radical changes in recent history, including the advent of online -- often free -- content provision, free classified ad websites (e.g., Craigslist), and convergence of various media, internet, and telecom players. There are also powerful industry organizations like WAN-IFRA, and policy makers monitoring the media industry because of its democratizing character and important public information channel.

3.5 Methodology

3.5.1 Model specification

Our model specification is based on our conceptual framework in figure 1 and follows Congdon (2008). We develop a hazard model specifying the influence of all previous market niche entries by any firm in any market, on a focal incumbent's time to enter the new market niche in a focal market. We model previous market niche entries by both industry new entrants and industry incumbents. Time-to-entry is denoted by variable T . Our unit of analysis is the incumbent firm-market combination. In our context, market borders are coinciding with country borders.

Our hazard model accounts for a permanent survivor fraction, a possibly non-monotonic event rate, and non-linear and asymmetric spillover effects. Traditional survival models assume a survivor function tending to be zero in the limit, i.e., that all incumbents would enter the new market niche in

the end. However, in line with previous research on split-hazard models (e.g., Sinha and Chandrashekar 1992; Dekimpe et al. 1998), it is more realistic to include a permanent survivor fraction which assumes that not all incumbents will enter the new market niche. It is highly unlikely that all incumbents will be convinced to pursue a purely ad-sponsored business concept which would easily turn into an unwanted Bertrand competition (Casadesus-Masanell and Feng 2011). Also, it is unlikely that the free daily newspaper market will totally overtake the paid daily newspaper market. Comparable free or low-cost initiatives in other industries such as the airline and banking industry, are also not completely overtaking, but rather living next to, paid businesses, serving different customer segments. Also, we assume (and test) that the event-rate will be non-monotonic. It means that the rate first increases but after reaching a peak it tails off again. It follows from our assumption of a permanent survivor fraction and our hypotheses on important first-mover advantages. A non-linear event rate is also in line with previous research stating that two opposing forces, i.e., legitimization and deterrence effects, can shape the entry rate in a given market such that there would be an inverted U-form relationship between entry rate and a market's competitive density (Carroll and Hannan 2000). Rival entry initially facilitates a process of legitimization attracting other players to enter the market. However, as competitive investments increase in certain markets, the best market space becomes pre-empted creating a deterrence effect that eventually can dominate the legitimization effect (Hannan and Freeman 1977). A log-logistic distribution is a parametric model accommodating for such a non-monotonic event rate.

Let E_n be a partially unobservable binary indicator and n be an observation from an incumbent firm i in a particular market c in which the incumbent firm i publishes a paid daily newspaper in February 1995 ($n = 1, 2, \dots, N$; $i = 1, 2, \dots, I$; $c = 1, 2, \dots, C$). An incumbent firm thus refers to a newspaper publisher who is publishing a paid daily newspaper at the time the free daily newspaper market niche started in February 1995. An incumbent firm can either enter the free daily newspaper market in the market where it already offers a paid newspaper (with $E_n=1$ and $\Pr(E_n=1)=\pi_n$), or not (with $E_n=0$ and $\Pr(E_n=0)=1-\pi_n$). Observing whether a firm enters or not depends on the censoring time. For firms observed to enter (denoted by a binary, censoring indicator $d_n=1$), $E_n=1$ and their likelihood contribution is $\Pr(E_n=1) f(t_n) = \pi_n f(t_n)$ with $f(t_n)$ the time-to-entry density function. Censored firms (with $d_n=0$) either enter never (i.e., permanent survivor) or enter after our observation period that runs from February 1995 till December 2010. Censored firms' likelihood contribution is then $\Pr(E_n=0) + \Pr(E_n=1) f(T>t_n) = (1-\pi_n) + \pi_n S(t_n)$ with $S(t_n)$ the time-to-entry survival function. Following a log-logistic distribution for T , the hazard function $f(t)$ and survival function $S(t)$ have the following form with α, λ and $t > 0$ (See equations 1 and 2). If $0 < a \leq 1$, we have a unimodal distribution. If, as we would expect, $a > 1$, then there is non-monotonicity. The overall likelihood of all N observations is specified in equation 3.

$$(1) f(t) = \frac{\alpha \lambda^\alpha t^{\alpha-1}}{(1+(\lambda t)^\alpha)^2}$$

$$(2) S(t) = (1 + (\lambda t)^\alpha)^{-1}$$

$$(3) L(t_n, d_n) = \prod_{n=1}^N \left[\left[\pi_n \frac{\alpha \lambda_n t_n^{\alpha-1}}{[1 + (\lambda_n t_n)^\alpha]^2} \right]^{d_n} \left[(1 - \pi_n) + \frac{\pi_n}{1 + (\lambda_n t_n)^\alpha} \right]^{1-d_n} \right]$$

π_n shows the probability to enter which we assume to be .27 based on a maximum likelihood grid search. We are interested in λ_n which models the timing of an incumbent's market niche entry

(See equation 4). Important parts of equation 4 are the following. First, we model the different types of entry spillover that can influence entry timing. Therefore, we include vectors $DF_{f't}$ and $DC_{c't}$ that consist of two dummy variables each ($DF_{f't} = [DF_{f'ct}; DF_{f'c't}]; DC_{c't} = [DC_{fc't}; DC_{f'c't}]$). $DF_{f'ct}$ indicates with a value '1' an entry by firm f' in market c by time t , i.e., entry spillover across firms within market on focal firm i in focal market c . $DC_{f'c't}$ indicates with a value '1' an entry by firm f' in market c' by time t , i.e., entry spillover across firm across market on focal firm i in focal market c . The other dummies have similar interpretations. The corresponding parameter vectors related to the cumulative sum of $DF_{f't}$ and $DC_{c't}$ entry spillover dummies are $B_1 = [\beta_{1,within m}, \beta_{1,across m}]$ respectively $B_2 = [\beta_{2,within f}, \beta_{2,across f}]$. Second, we include firm and country characteristics that could moderate entry spillover through proximity, sphere of influence, and receptivity. Therefore, we use FPROX, FSPHERE, and FRECEPT to model moderation of spillover across firms and CPROX, CSPHERE, and CRECEPT to model moderation of spillover across markets. Corresponding parameter vectors related to spillover moderators are then $K[1 \times 3]$ and $\Xi[1 \times 3]$. Third, we include an intercept and control variables (cf., CONTROL) with the corresponding parameter vector $\Gamma[1 \times 4]$.

By modeling spillover like this, we account for different types of entry spillover, and also for possible non-linear and asymmetric spillover effects. The extent to which spillover occurs depends on the specific pair of firms respectively markets studied and their characteristics. Table 1 gives an overview of all concepts, variables and corresponding parameters that are used in our model.

$$(4) \lambda_n = \exp \left[\Gamma CONTROL_{ict} + B_1 \sum_{f'=1, f' \neq i}^F \left[\frac{\exp(K_1 FPROX_{if't})}{\sum_{l=1, l \neq i}^F \exp(K_1 FPROX_{ilt})} \exp(K_2 FSPHERE_{f't}) \exp(K_3 FRECEPT_{it}) DF_{f't} \right] + B_2 \sum_{c'=1, c' \neq c}^C \left[\frac{\exp(\xi_1 CPROX_{cc't})}{\sum_{q=1, q \neq c}^C \exp(\xi_1 CPROX_{cqt})} \exp(\xi_2 CSPHERE_{c't}) \exp(\xi_3 CRECEPT_{ct}) DC_{c't} \right] \right]$$

3.5.2 Estimation

We estimate our model using a combination of Metropolis-Hastings (MH) updating algorithms that are a family of Markov Chain Monte Carlo (MCMC) simulation methods. Direct, closed estimation of our non-linear model is also possible, but is less preferred as we want to maintain maximum model flexibility, e.g., when trying to include heterogeneity through random effects in future applications. MH algorithms are useful for drawing samples from Bayesian posterior distributions when not knowing exactly the functional form of those posterior distributions. Therefore, we use an MH algorithm for every parameter of interest to approach its posterior distribution. Our estimation procedure is in line with prescriptions by Gelman et al. (2004) and Hoff (2009).

The MH algorithm is an adaptation of a random walk using an acceptance/rejection rule to converge to a specified target distribution, i.e., a posterior distribution for a parameter of interest.

We run an MH algorithm for each parameter of interest. For example, the MH algorithm works as follows for parameter γ_1 .

- Step 0: We start from an informed prior. Our start value for parameter γ_1 is based on the highest likelihood density in parameter space for γ_1 . For every parameter, including the probability to enter π_n , we include a prior value through a grid search based on the highest likelihood density in parameter space.
- For sequence s (with $s=1,2,\dots,S$), we update γ_1^{s-1} to γ_1^s as follows:
 - Step 1: we sample a proposal γ_1^* from a proposal distribution $J_s(\gamma_1^*|\gamma_1^{s-1})$. We allow our proposal distribution to be asymmetric, i.e., there is no requirement that $J_s(\theta_a|\theta_b) \equiv J_s(\theta_b|\theta_a)$. An asymmetric proposal distribution can increase the speed of convergence of the simulation.
 - Step 2: we calculate the ratio of densities $r = \frac{\frac{p(\gamma_1^*|y)}{J_s(\gamma_1^*|\gamma_1^{s-1})}}{\frac{p(\gamma_1^{s-1}|y)}{J_s(\gamma_1^{s-1}|\gamma_1^*)}}$, with y our data set.
 - Step 3: we update our parameter value for γ_1 as follows. We set γ_1^s to γ_1^* with probability $\min(r,1)$; we set γ_1^s to γ_1^{s-1} otherwise.

It is important to note that we have a MH algorithm for every parameter of interest we want to have a posterior distribution from. For example, for a simulation in which we would only include the 4 control variables (including intercept), every sequence s in our simulation shows the following set of updates.

- For sequence s (with $s=1,2,\dots,S$):
 - Update γ_1^{s-1} to γ_1^s based on γ_2^{s-1} , γ_3^{s-1} , and γ_4^{s-1}
 - Update γ_2^{s-1} to γ_2^s based on γ_1^s , γ_3^{s-1} , and γ_4^{s-1}
 - Update γ_3^{s-1} to γ_3^s based on γ_1^s , γ_2^s , and γ_4^{s-1}
 - Update γ_4^{s-1} to γ_4^s based on γ_1^s , γ_2^s , and γ_3^s

Our estimation procedure has also other important characteristics. First, we conduct three main simulations in a hierarchical set-up. The first simulation only includes control variables. The second simulation includes both control variables and types of entry spillover. The third simulation includes all variables, i.e., control variables, entry spillover types, and entry spillover moderators. Second, each simulation with in total 60,000 iterations starts with adaptive updating (for s from 1 to 10,000) to find the most appropriate updating step for each MH algorithm which renders an acceptance ratio between 0.2 and 0.5. The acceptance ratio is the number of accepted proposals relative to the number of proposals made in a number of simulation iterations. Adaptive updating means that, based on the acceptance ratio, we change the jump with which a proposal distribution proposes a new parameter value based on the last updated value of that parameter. We assess the acceptance ratio every 500 sequences so that we have a maximum of 20 adaptations to the updating step. Third, after the initial adaptive updating sequences, each simulation sequence runs for another 50,000 iterations with a fixed jump (being the final jump obtained after adaptive updating). We use the

adaptive updating sequence as burn-in, i.e., disregard it in our final results, and a thinning of 250 to decrease autocorrelation in our fixed jump sequences. Thinning by 250 means that we only keep every 250th iteration. It follows that, from our total simulation of 60,000 iterations, we base our posterior analyses on a simulation sample size of 201 observations.

3.6 Data and measures

3.6.1 Data collection

We collect data on both paid and free daily newspaper publishers for 14 European markets in the period 1995-2010. We collect firm level data such as market niche entry decisions for the free daily newspaper market niche and firm resource characteristics. Our information sources include industry organization reports and databases, industry expert websites and interviews, company reports, and newspaper articles. We also collect information on markets' economic, demographic, geographic and cultural characteristics through various public data sets such as *CEPII* on geographic distances, the *CIA World Fact Book*, the *Economist Intelligence Unit*, the *International Monetary Fund*, Hofstede's website on cultural dimensions, and the *World Bank*.

Our data set is appropriate for several reasons. First, our sample is representative for the paid daily newspaper incumbent industry. We identify paid daily newspaper incumbents through the *WAN-IFRA World Press Trends* yearbooks and the *United Nations' 1995 World Media Handbook*. Using these reference information sources makes us confident to have sampled all relevant paid daily newspapers that were in business in 1995. Second, our sample is representative for the free daily newspaper market niche. Our data set includes 95 free daily newspapers in 14 European countries on a total number of 134 across the continent and Canada that are introduced in or before 2010. Also, our sample covers both early adopting countries of free daily newspapers like Sweden, Finland and the Czech Republic, and late adopters like Austria, Denmark, and France. Third, our sample is representative for the economic, demographic, geographic, and cultural diversity in Europe. We sample across important economic and demographic countries like Germany and France, but also smaller countries like Belgium and Denmark. Our sample includes Nordic countries like Sweden and Finland, middle countries like the Netherlands and Switzerland, Southern countries like France, and Eastern countries like Austria, Bulgaria, the Czech Republic and Croatia. Fourth, our data set does not suffer from an inherent survivor bias and fuzzy identification of adoption timing which sometimes hinders research on entry timing. Introduction dates for free daily newspapers are not that difficult to obtain and not biased. On the contrary, there are often difficulties in identifying the exact year of introduction of new products in a particular market and most databases include a product only when it has achieved non-trivial sales creating an inherent survivor bias (Chandrasekaran and Tellis 2008).

3.6.2 Measures

Our dependent variable is the incumbent's time to enter the free daily newspaper market niche in its incumbent market where it publishes a paid daily newspaper. A paid daily newspaper publisher is considered an incumbent when offering a paid daily newspaper in the focal market in February

1995. We measure time-to-entry as the number of months between the entry of the focal incumbent in the focal market and February 1995, i.e., the moment when *Metro International* introduced the free newspaper niche in Sweden.

The previous entries in the free daily newspaper market niche are measured using dummy variables and split in the model based on their possible spillover across firms or markets. Previous entries that create possible spillover across firms are captured by $DF_{f't} = [DF_{f'ct}; DF_{f'c't}]$. Previous entries that create possible spillover across markets are captured by $DC_{c't} = [DC_{fc't}; DC_{f'c't}]$.

Different firm characteristics are measured as follows. First, with respect to firms' proximity, we measure market contact, that represents firm familiarity, as a dummy with value '1' if two firms have one or more overlapping markets. We measure a pair of firms' resource similarity as the firms' absolute difference of the log of their total paid daily newspaper circulation across all markets. Second, with respect to a firm's sphere of influence, we measure market leadership with a dummy having value '1' if the firm has the highest paid daily circulation in its market. Third, with respect to a firm's receptivity, we measure firm size as the log of the incumbent's total paid daily newspaper circulation across all markets.

Different market characteristics are measured as follows. First, with respect to markets' proximity, we build a compound, standardized measure including cultural distance (Kogut and Singh 1988), a dummy with value '1' if two markets have an official language in common, the geographic distance between two markets' capitals, and the one-year lagged absolute difference of the log of the markets' GDP. Second, with respect to a market's sphere of influence, we construct a compound, standardized measure including the one-year lagged log of GDP, the one-year lagged percentage of total export in a market's GDP (both logged), and a market's population in millions. Third, with respect to a market's receptivity, we develop a compound, standardized measure including the one-year lagged log of GDP, the one-year lagged percentage of total import in a market's GDP (both logged), and the market's population density.

We include various control variables. First, we control for an incumbent's baseline size, i.e., the incumbent's log of total paid daily newspaper circulation across all markets in the year 1995. Second, we measure risk as the number of free daily newspapers that previously existed but already exited from the focal market. Because of the inherent time lag in the way we measure risk, we exclude endogeneity concerns for that measure. Also, because it is hard to get to know the underlying reasons for these entry failures without respondent bias, we use this relatively straightforward count measure for measuring risk. Third, we use a compound, standardized measure for focal market attractiveness consisting of the one-year lagged total ad expenditures as percentage of a market's GDP, the one-year lagged log of a market's GDP per capita, the log of total number of inhabitants older than 14 years, and the urbanization percentage.

The time dependency of our variables is not likely to introduce a bias in our results for at least two reasons. First, there is no danger of reverse causation because of the time lag we applied in our measures and the interpretation of our variables. There would be reverse causation when the time-dependent variable is effected by the likelihood of an event, instead of the other way around. Second, our data changes over time and it is important our measures take that into account. Moreover, key data like the number of cumulative entries in the new market niche, are simply not

present at baseline which makes it better to include them as time-dependent measures. Table 1 gives an overview of all measures used for the different variables included in our model.

3.7 Results

3.7.1 Descriptives

From table 2 we see that our sample covers 95 free daily newspapers introduced across 14 European markets in the period 1995-2010. Sweden and Germany were the first markets to find free daily newspapers (both in 1995), whereas Bulgaria (2008) and Croatia (2006) were late adopters. However, markets with a rather late first introduction of free daily newspapers, could still see a lot of free daily newspapers entering the market. For example, France (2002) and Denmark (2001) had their first free daily newspaper rather late, i.e., in 2002 respectively 2001, but at the end of 2010 already 9 respectively 11 free daily newspapers were introduced. In total, there were 99 free daily newspaper niche entries by firms: 55 by new entrants and 44 by paid daily newspaper incumbents. We collected data on 163 incumbents. The smallest incumbent had a total paid daily newspaper circulation in 1995 of 24,000 and the largest incumbent a total paid daily newspaper circulation of 5,712,370. The number of free daily newspapers introduced in this 16-year period differs per market, ranging from only 1 free daily newspaper introduction in Belgium to 12 free daily newspapers introduced in Spain. We observe that smaller markets like Switzerland and Denmark can also have a high number of free daily newspapers introduced, i.e., 10 respectively 11. However, there were also a high number of failures in the free daily newspaper market niche. In total, there were at the end of 2010 56 failures across all 14 markets ranging from zero failures in Belgium to 9 failures in Denmark and Germany, and on average of almost 4 failures per market.

Tables 3, 4, and 5 show the correlation tables for our control variables, and the firm and market characteristics that moderate entry spillover. There is a high correlation of firm similarity with market leadership (.48) and ability to respond (.98) which is driven because we develop all these measures on the basis of firm size. Because of this high correlation and the fact that we still have firm familiarity to relate with firms' proximity dimension, we leave out firm similarity from our estimations. The high correlation between firm leadership and ability to respond (.51) is less of a problem, because both measures cannot occur together when relating to the same firm (cf., $f' \neq i$ in equation 4). The high correlation between country proximity and country receptivity (.56) is driven by a shared variable, i.e., GDP. When leaving out GDP from country proximity, correlation between country proximity and receptivity decreases to .20, but the correlation between proximity and sphere of influence increases to .54 (although there is not a particular reason for this). We check for our results' robustness when leaving out GDP from country proximity.

3.7.2 Model fit

There are two important steps to assess our model fit. In a first step we need to identify whether our MCMC simulation results are likely to have reached convergence. To assess the convergence of our sequences for each parameter of interest, we look at both the adaptive and fixed jump part of

our simulation. Iterations 1 to 10,000 run with an adaptive algorithm in which the jump with which a new parameter value is proposed can change every 500 iterations based on the parameter proposal's acceptance ratio. A proposal acceptance ratio, ideally between .2 and .5, is calculated to have an idea on how well the MCMC sequence of iterations is mixing. With a sequence length of 10,000 iterations and a possible change every 500th iteration, there can be maximum 20 changes. A first step towards convergence is when the number of changes is well below 20 for a particular parameter simulation, which means the updating step provides good mixing. From table 6 in columns 'Adapt CD' we can observe that the number of proposal step changes is for every parameter lower than 16 (and for most it is lower than 6) on a maximum of 20, which means that the proposal step jump quickly converges to a particular value that is good enough for mixing purposes. Iterations 10,001 to 60,000 run with a fixed jump algorithm, with the proposal step jump being the final proposal step jump from the adaptive part. Table 6 shows the final proposal step jump under columns 'Adapt D'. For example, for the parameter of firm proximity we have a final proposal step of 2.563. It means that for iteration s , our proposal ξ_1^* is generated from a proposal distribution $J_s(\xi_1^* | \xi_1^{s-1})$ with $J_s \sim N(\xi_1^{s-1}; 2.563)$.

For our fixed jump algorithm, we assess convergence through statistical diagnostic tests such as the effective sample size (Kass et al. 1998) and the Geweke diagnostic (Geweke 1992). We also use trace plots as visual tests of convergence. Although trace plots are not recommended as sole tool to assess convergence, they are still useful to assess mixing and identify the trends in the simulated data (Gelman et al. 2004). To reach acceptable convergence, we should have limited autocorrelation and good mixing in our simulated parameter sequences. A large discrepancy between the effective sample size and the simulation sample size indicates poor mixing and high autocorrelation. Our simulation sample size is 201, given we have 50,000 iterations in our fixed jump algorithm (cf., adaptive part serves as burn-in) and a thinning by 250. The Geweke diagnostic compares values in the early part of the Markov chain (first 10%) to those in the latter part of the chain (last 50%) in order to detect failure of convergence. It tests whether the mean estimates of those two parts in the chain have converged by comparing means from the early and latter part of the Markov chain. It is a two-sided test based on a z-score statistic. Large absolute z values (>1.96) indicate rejection of convergence.

In table 6 we can observe the effective sample sizes and Geweke diagnostic test values for the different models we estimate. We see that all sequences in step 3 (cf., the full model) seem to converge with an absolute Geweke test value well below 1.96 and effective sample sizes that are often close to the simulation sample size of 201. Closer inspection of autocorrelation functions and trace plots (in tables 7 and 8) of the sequences in step 3 that have lower effective sample sizes than 201 indicates that all sequences are well-mixed and indeed seem to converge around a particular value, and that autocorrelation is acceptable. Moreover, the overall model converges based on the Geweke diagnostic of the log likelihood value and its effective sample size. Also for our step 1 and step 2 models, we see in table 6 overall model convergence based on the Geweke test value and the effective sample size of the log likelihood. Nevertheless, there are two variables in step 1 (cf., intercept and firm base size) and one variable in step 2 (cf., market attractiveness) that seem not to converge based on their Geweke test value. However, their non-convergence does not affect overall model convergence. Moreover, these control variables' parameter values (in table 9) are in line with

the output of the model in step 3 that does converge. Also, we test the robustness of the models in step 1 and 2 using a closed estimation procedure.

In a second step we assess model fit by looking at the log-likelihood and Bayesian information criterion (BIC) of our different models (Dixit and Chintagunta 2007). Models with lower values of BIC are preferred. Table 9 shows the log-likelihood and BIC values of our models per estimation step. Our step 1 model only includes control variables. Our step 2 model includes both control variables and types of entry spillover. The step 3 model includes all variables, i.e., control variables, entry spillover types, and entry spillover moderators. We observe that our model in step 3, including all variables, is preferred over the other models in step 1 and 2. Our model in step 3 has the lowest BIC value (-326.226), compared to our model in step 1 (-311.314) and step 2 (-303.769). Also, we see that when taking market niche entry spillover into account, we also need to consider that there can be firm and market characteristics that moderate entry spillover. Indeed, modeling market niche entry spillover types without its moderators (step 2) gives lower model fit than including both entry spillover types and moderators (step 3).

3.7.3 *Parameter estimates*

Table 9 shows the mean, the 95% confidence interval, and the standard error of the posterior distribution of our parameter values per different model step. From table 9 we observe the following. First, we see that there are two different types of entry spillover influencing incumbents' entry timing, i.e., entry spillover across firms within markets (H1b: $\beta_{1,within m}$), and entry spillover across firms across markets (H1c: $\beta_{1,across m}, \beta_{2,across f}$). We thus confirm previous research on imitation behavior of firms within the same market and we identify a previously unknown entry spillover type across firms that are not directly competing in different markets. Due to a limited number of firms that are active in different markets in the context of newspaper publishing, our results do not reflect that entry timing may be influenced by entry spillover within firms across markets (H1a: $\beta_{2,within f}$). In line with our hypotheses H1b and H1c, both the entry spillover types across firms within markets and across firms across markets have a negative influence on entry timing, i.e., the more previous market niche entries there are the faster incumbents want to enter the new market niche. It shows that incumbents use the information signals from previous market niche entries to inform and speed up their own market niche entry decision. From table 9 we see that these results are consistent across estimation steps 2 and 3.

Second, our results show that a firm's sphere of influence related to incumbent market leadership (H2b: κ_2) is the only moderator having an impact on market niche entry spillover across firms. However, instead of the expected amplified effect on spillover, market leadership rather decreases the spillover effect across firms. It implies that, when a particular incumbent market leader enters the new market niche, other incumbents, in whatever market they are, reduce their time to enter less than when a non-market leader would have entered. It suggests that the deterring effect of a market leader entering the new market niche is stronger than the legitimizing effect. Other hypothesized firm-related moderators, i.e., firms' proximity in terms of market familiarity (H2a: κ_1) and firm's receptivity on market niche entry spillover (H2c: κ_3), have no effects that are meaningfully different from zero.

Third, we observe that markets' proximity amplifies market niche entry spillover across markets as hypothesized by H3a (ξ_1). Our compounded measure for market proximity based on markets' cultural, demographic, and economic proximity converges around a strongly positive value (cf., mean of 100). It implies that whenever a firm in a market different from the focal market, enters the new market niche, incumbents in the focal market reduce their time to enter more the closer the market in which that entry was, is. It suggests that the deterring effect of a 'close' market niche entry is weaker than the legitimizing effect. We do not find support that a market's sphere of influence (H3a: ξ_2) or a market's receptivity (H3a: ξ_3) may influence market niche entry spillover across markets.

Fourth, we expected our log-logistic parameter α to be >1 which would indicate we have non-monotonicity in our event rates. Consistent across all simulation steps and the associated models, our results strongly support that $\alpha > 1$.

Fifth, with respect to our control variables we see consistently across all simulation steps, that there is a negative intercept ($\gamma_1 < 0$) and a negative effect of market risk ($\gamma_3 < 0$) on an incumbent's market niche entry timing. It implies that the risk of entering the new market niche in the focal market, which incumbents can observe through previous failures in that new market niche in the focal market, has a decreasing effect on incumbents' entry timing. We see no effects of a firm's base size (γ_2) nor a market's attractiveness (γ_4), that are meaningfully different from zero.

We conduct two robustness checks. First, we check for a closed estimation approach in step 1 and 2 reaching convergence (because some variables did not converge in our MCMC estimation approach). From table 10 we see that the closed Cox Proportional Hazards estimation gives similar results as what is reported in table 9 for steps 1 and 2. Second, we checked our MCMC results' robustness when leaving out GDP from market proximity and it gave no meaningfully different results.

3.8 Discussion

The main findings of our results are the following. We identify different types and moderators of market niche entry spillover that influence an incumbent's entry timing decision into a new market niche. We find that incumbents' entry timing is influenced by two main types of entry spillover. First, in line with previous research on contagion, we observe entry spillover across firms within markets, i.e., imitation behavior among direct competitors. Second, we identify a previously unknown type of entry spillover across firms across markets, i.e., indirect learning across markets in which a focal incumbent is not active and imitation across firms that are not directly competing in the same market. Also, we show that market niche entry spillover is non-linear, heterogeneous, and asymmetric while being moderated by important firm and market characteristics. More specifically, we detect markets' proximity in terms of culture, geography, and economy, as an amplifier of market niche entry spillover across markets, whereas the entry of an incumbent market leader in a new market niche delays other incumbents' market niche entry.

3.8.1 Implications for marketing theory

Our findings hold important implications for marketing theory. First, we contribute to the literature on scanning by showing which information signals actually (instead of potentially) influence a firm's decision while taking into account signals from both served and non-served geographic environments. Thereby, we shift the attention from the scanning system, its characteristics, and its usage, towards the possible impact of a scanning system in firms' decision-making. By linking scanning activities more closely to firm decision-making, we also add to previous research' claims that environmental scanning is important for long-term performance enhancing capabilities such as market orientation, absorptive capacity, dynamic capability, and organizational vigilance. Second, we extend signaling theory by identifying the co-existence of both direct and indirect signals related to market entry. Direct signals are tied to the market of interest or direct competitors, whereas indirect signals are tied to non-focal markets or indirectly competing firms. Prior research on signaling focuses on direct signals. Market entry spillover across firms across markets suggests that indirect signals can still be meaningful, i.e., that these indirect signals can still influence firm decision-making. Moreover, we detect firm and market characteristics that increase signal strength and we model the influence of signals on firm behavior more realistically taking into account characteristics of signal senders and receivers. Third, our hazard model has several characteristics to create more realistic models for empirical research on market entry timing. We allow for non-monotonic event rates to allow for models closer to empirical settings, asymmetric effects to include more realistic spillover models, and permanent survivor fractions that follow common sense that not all incumbents always enter new market niches. Moreover, our model is highly flexible and uses publicly accessible data.

3.8.2 Implications for marketing practice

Our findings also hold some important implications for marketing practice. We identify relevant dimensions of firm scanning activities and how these can influence a firm's market niche entry timing decision in a complex and uncertain market context. Business environments are becoming increasingly fast-paced and complex. New business ideas and technological evolutions creating new market opportunities, but also threats, are in many industries the only constant. Incumbent firms struggle how to deal appropriately with these market opportunities and threats. They face severe financial and managerial risks related to a lack of information on the new market niche. Therefore, firms scan their environment searching for information related to a new market niche. Although scanning activities are considered very important in underlying a firm's capabilities on how to deal with change, previous research on scanning focused merely on its potential -- and not actual -- impact on firm decisions. The scanning literature offers insights in how firms can develop and use a scanning system focusing on system features such as scope and frequency, and top management support. However, with respect to sensing and capturing *weak* information signals, structuring instant and geographically dispersed information, and identifying the relevant information signals for fast and effective decision-making, previous scanning research falls short.

Our study helps managers to structure their scanning process by identifying potentially relevant sources of information signals that occur simultaneously in an incumbent's close but also distant environment. We do not only identify internal organizational learning and direct competitive imitation as relevant influencers of incumbents' entry timing decision. Also, weak signals outside a

firm's geographic environment have an influence on their decision making. Moreover, we indicate to managers that being influenced by particular information signals depends on the sender of that signal (e.g., a market leader) and the distance the signal has to overcome (e.g., signals across similar markets). Our results on what firm and market characteristics are moderating entry spillover, will benefit managers through knowing better how to organize scanning activities and gather industry intelligence in terms of what markets and firms to watch for competitive and industry-specific information, without creating data overload. With this study, firms confronted with new market niches will be better able to foresee and predict whether, when and where incumbents will react. That can be important for both innovators and incumbent firms in order to proactively assess competitive behavior and evolutions in the industry.

3.9 Conclusion and future research

In this study, we discuss how firms learn and capture information signals across firms and markets. We do that in a context of high uncertainty for incumbents who need to decide when to enter a new market niche. We model entry spillover, i.e., previous market niche entries that influence a focal niche entry decision. We identify different types and moderators of market niche entry spillover that influence an incumbent's market niche entry timing. We find that incumbents' entry timing is influenced by both direct and indirect entry spillover. Also, entry spillover is non-linear, heterogeneous, and asymmetric while being moderated by important firm and market characteristics. We model incumbents' time to enter the new market niche using a Bayesian hazard model that accounts for non-monotonic event rates, non-linear, heterogeneous, and asymmetric spillover effects, and a permanent survival fraction. We estimate our model through a Markov-Chain Monte-Carlo procedure using Metropolis-Hastings algorithms. Our study has important contributions for conceptual theory, methodology, and managerial practice.

However, our work also has limitations that offer future research opportunities. First, our unit of analysis is the incumbent-market combination with the market defined on country level. On the one hand, our market could be defined too narrowly. However, the newspaper market is not a European market, but is competed for at country level. For example, only 7 out of 149 of our paid daily newspaper incumbents has paid daily newspaper operations in more than one country. On the other hand, our market definition could be too wide. Country-level data instead of regional or city-level data loses some potential for more fine-grained analysis. However, our results can be seen as conservative, i.e., showing less easily significant results, relative to analyses with regional or city-level data. Also, competition within countries often takes place in the country's capital or in a limited set of large cities which implies that competition within a country resembles head-on competition. Finally, regional or city-level data for all variables concerned is not available for such an extensive time period in all countries. Second, we studied the relationship from market insights (cf., information signals related to previous market niche entries) towards marketing capabilities (cf., capturing and interpreting information signals to enter a new market niche). However, some suggest this relationship is reciprocal, i.e., that there is also an influence from marketing capabilities on market insights (Day 2011). We partly covered this limitation by including free failures as control variable market risk, without making our dependent variable endogenous. However, future research

could further explore the reciprocity between market insights and marketing capabilities by estimating them simultaneously. Third, the context of our study is a single industry. It implies there is less room for missing important variables or having to include too many. Country and firm characteristics that moderate market niche entry spillover can also be industry-specific which would make it very difficult to have the same depth and complexity in an multi-industry analysis with enough appropriate data. However, further research across industries is needed to appraise our findings' relevance in different settings.

3.10 References

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3.11 Tables

Table 1: overview of measures

Concept	Variable	Measure	Data source	Parameters
Types of entry spillover	Types of entry spillover	Count measures based on summation of dummies indicating entries in the free newspaper niche. Different dummies indicate different types of spillover across firms or markets.	Desk research	B_1, B_2
Firm proximity	Market familiarity	1 if two firms are both present in one or more markets; else 0	Desk research	κ_1
Firm sphere of influence	Market leadership	1 if highest paid circulation in a market; else 0	WPT/desk research	κ_2
Firm receptivity	Firm size	Standardized total paid daily newspaper circulation across all markets	WPT/desk research	κ_3
Market proximity	Cultural, geographic, and economic proximity	Compound measure (standardized measures transformed towards proximity), based on: <ul style="list-style-type: none"> • Cultural distance based on Kogut and Singh (1988) • 1 if overlap among official languages; 0 else • Distance between two markets' capitals • One-year lagged absolute difference of log of GDP between two markets 	Hofstede values CIA CEPII Worldbank	ξ_1
Market sphere of influence	GDP Export Population	Compound measure (standardized measures): <ul style="list-style-type: none"> • Log of GDP (one-year lagged) • Lag 1 of Log of total export / log of total GDP • Population in million 	Worldbank EIU	ξ_2

Concept	Variable	Measure	Data source	Parameters
Market receptivity	GDP Import Population density	Compound measure (standardized measures): <ul style="list-style-type: none"> Log of GDP (one-year lagged) Log of total import / log of total GDP (one-year lagged) Population/km² 	Worldbank CIA/EIU	ξ_3
Control variables	Firm base size	Log of total paid daily newspaper circulation across all markets for firm i in year 1995	WPT/desk research	γ_2^*
	Market risk	Number of free dailies exited previously from the market	desk research	γ_3
	Market attractiveness	Compound measure (standardized measures): <ul style="list-style-type: none"> Ad spend as % of GDP (one-year lagged) GDP per capita (one-year lagged) Number of inhabitants >14 year Urbanization (%) 	WPT Worldbank EIU	γ_4

WPT=World Press Trends data base; IMF=International Monetary Fund; EIU=Economist Intelligence Unit; *: γ_1 is the intercept.

Table 2: free newspapers in Europe

Country	1 st introduction of free newspaper	Incumbents censored	Incumbents entered	Incumbents total	New entrants	Cumulative # of firms entered the free newspaper niche by end 2010	# Free newspapers set up by end 2010
Austria	2001	6	3	9	4	7	8
Belgium	2000	4	2	6	0	2	1
Bulgaria	2008	5	1	6	2	3	3
Croatia	2006	4	1	5	2	3	2
Czech Republic	1997	3	2	5	2	4	5
Denmark	2001	7	4	11	4	8	11
Finland	1997	5	1	6	2	3	2
France	2002	16	4	20	7	11	9
Germany	1995	13	5	18	4	9	10
Netherlands	1999	6	3	9	3	6	7
Spain	2000	17	4	21	12	16	12
Sweden	1995	12	4	16	5	9	6
Switzerland	1999	7	4	11	3	7	10
UK	1999	14	6	20	5	11	9

Table 3: correlation table control variables

	Firm base size	Market risk	Market attractiveness
Firm base size	1		
Market risk	-0.1120254	1	
Market attractiveness	0.3258719	0.3128484	1

Table 4: correlation table firm-related moderators of entry spillover

	Familiarity	Similarity	Leadership	Ability to respond
Familiarity	1			
Similarity	0.1140169	1		
Leadership	0.2845392	0.4781161	1	
Ability to respond	0.1595235	0.9848833	0.5151123	1

Table 5: correlation table market-related moderators of entry spillover

	Proximity	Sphere of influence	Receptivity
Proximity	1		
Sphere of influence	0.004464288	1	
Receptivity	0.558912719	-0.186863037	1

Table 6: convergence and model fit

Variables	Parameters	Step 1				Step 2				Step 3			
		Adapt	Adapt	Fix	Fix	Adapt	Adapt	Fix	Fix	Adapt	Adapt	Fix	Fix
		CD	D	ESS	G	CD	D	ESS	G	CD	D	ESS	G
Log Likelihood				201	1.011			136	.123			122	.641
Log-logistic parameter	α	15	1.460	201	.546	13	1.946	201	.153	13	1.946	139	.297
Intercept	γ_1	3	.338	31	3.073	4	.169	24	.643	4	.169	24	.812
Firm base size	γ_2	4	.019	30	2.794	4	.019	35	.700	4	.019	35	.549
Market risk	γ_3	4	.169	201	1.122	4	.056	151	.446	3	.113	101	.773
Market attractiveness	γ_4	4	.506	201	1.352	4	.506	201	3.191	4	.506	201	.470
Across F within M*	$\beta_{1,within m}$					4	.169	201	.287	3	.338	201	.055
Within F across M*	$\beta_{2,within f}$					5	.759	201	1.236	5	.759	201	1.028
Across F across M*	$\beta_{1,across m}$					4	.169	59	.013	5	.253	31	1.299
Across F across M*	$\beta_{2,across f}$									4	.169	121	1.340
Firm proximity	κ_1									8	2.563	104	1.49
Firm sphere of influence	κ_2									8	2.563	201	.945
Firm receptivity	κ_3									2	.075	92	.696
Market proximity	ξ_1									8	2.563	201	1.447
Market sphere of Influence	ξ_2									12	1.442	235	1.349
Market receptivity	ξ_3									7	.570	201	.694

Adapt=adaptive algorithm (N=10,000); Fix=fixed-step algorithm (N=50,000); CD = # changes in proposal step (with a potential maximum of 20); D=final proposal step also used in fixed algorithm; ESS: effective sample size gives a MCMC's sample size adjusted for autocorrelation, i.e., the number of statistically independent observations in a MCMC (of 201 observations in our case); G=Geweke test statistic: standard normal test statistic testing for convergence (H0: convergence). Significance at level .05 is indicated in bold format.

Table 7: trace plots full model

Log-logistic parameter α		Across F within M* $\beta_{1,within m}$	
Intercept γ_1		Within F across M* $\beta_{2,within f}$	
Firm base size γ_2		Across F across M* $\beta_{1,across m}$	
Market risk γ_3		Across F across M* $\beta_{2,across f}$	
Market attractiveness γ_4		Firm familiarity κ_1	
Market leadership κ_2		Ability to respond κ_3	

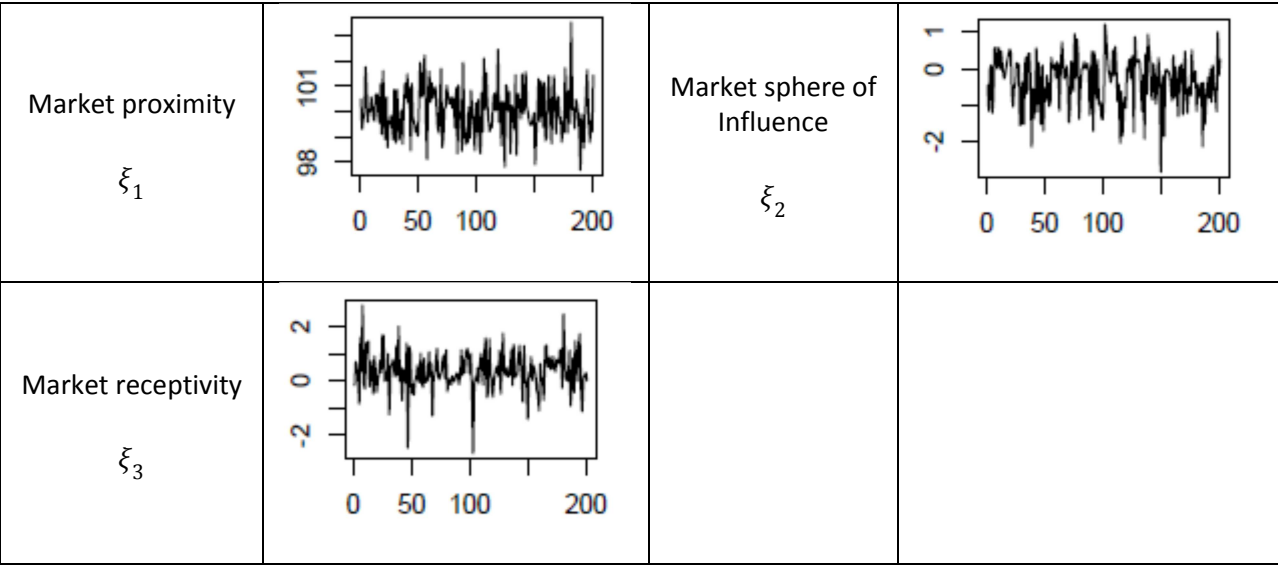
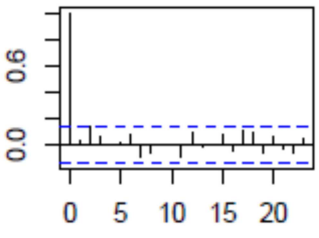
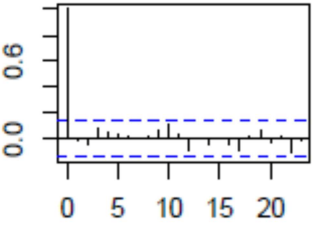
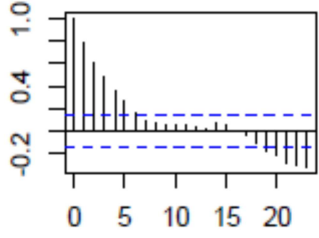
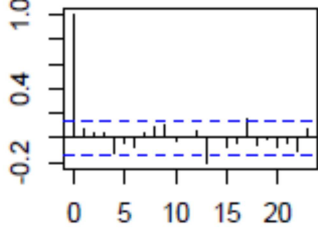
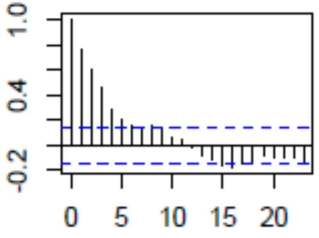
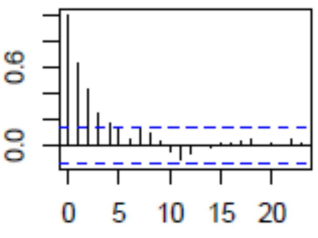
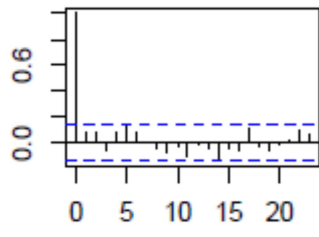
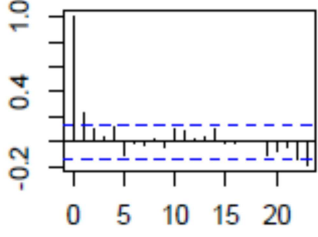
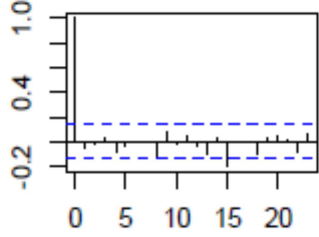
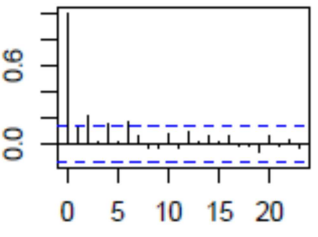
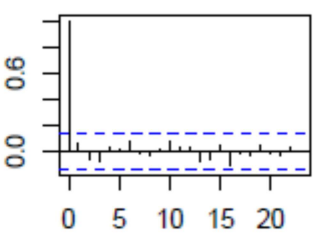
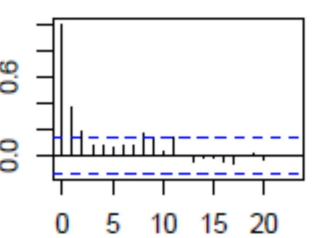


Table 8: autocorrelation functions full model

Log-logistic parameter α		Across F within M* $\beta_{1,within\ m}$	
Intercept γ_1		Within F across M* $\beta_{2,within\ f}$	
Firm base size γ_2		Across F across M* $\beta_{1,across\ m}$	
Market risk γ_3		Across F across M* $\beta_{2,across\ f}$	
Market attractiveness γ_4		Firm familiarity κ_1	
Market leadership κ_2		Ability to respond κ_3	

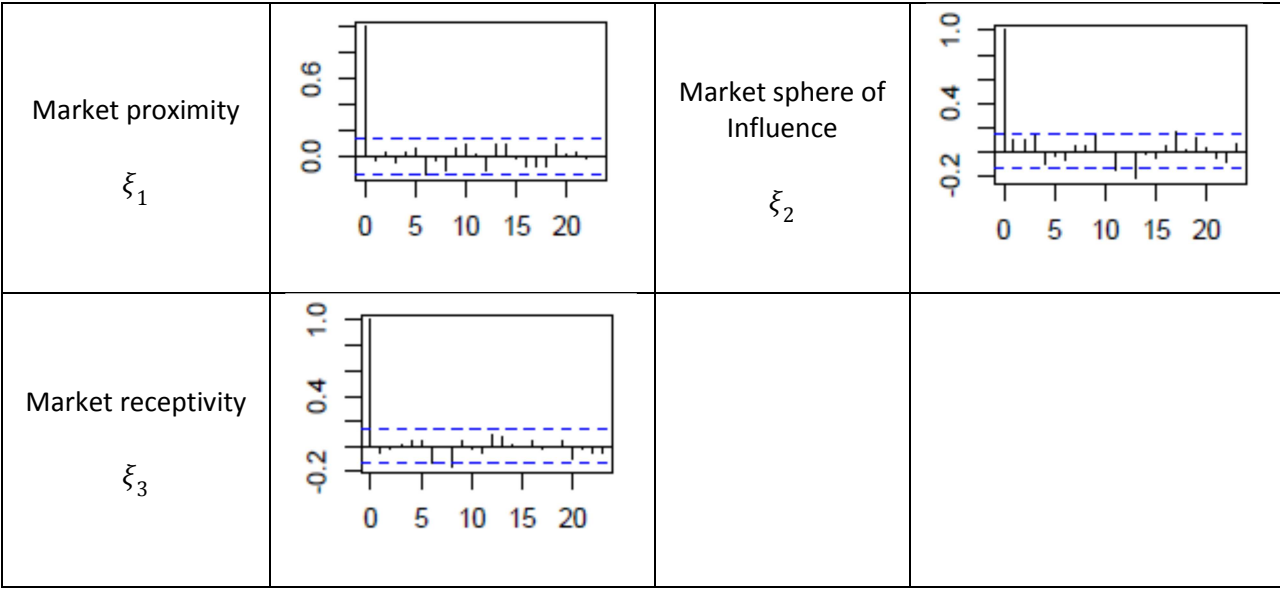


Table 9: parameter estimates Bayesian hazard MCMC approach

Variables	Parameters	Step 1: controls only			Step 2: controls and types of spillover			Step 3: all		
		Mean	CI (.025;.975)	SE	Mean	CI (.025;.975)	SE	Mean	CI (.025;.975)	SE
Log-logistic parameter	α	4.923	3.676; 6.167	.046	6.431	4.887; 8.123	.066	5.875	3.988; 7.458	.079
Intercept	γ_1	-5.251	-6.376; -4.227	.101	-2.701	-3.923; -1.576	.123	-2.913	-4.346; -1.650	.140
Firm base size	γ_2	.048	-.039; .139	.008	.096	.0326; .166	.006	.046	-.049; .155	.009
Market risk	γ_3	-.202	-.277; -.136	.003	-.090	-.146; -.047	.002	-.121	-.184; -.076	.003
Market attractiveness	γ_4	.386	.162; .637	.010	.168	-.031; .392	.008	.071	-.272; .399	.012
Across F within M*	$\beta_{1,within\ m}$				-.650	-.942; -.384	.010	-.594	-.984; -.302	.012
Within F across M*	$\beta_{2,within\ f}$				-.095	-.497; .263	.014	-.128	-.610; .204	.015
Across F across M*	$\beta_{1,across\ m}$				-3.154	-4.153; -1.983	.073	-2.497	-3.531; -.669	.116
Across F across M*	$\beta_{2,across\ f}$							-.055	-.617; .303	.018
Firm proximity	κ_1							-.157	-2.603; 1.243	.106
Firm sphere of influence	κ_2							-5.992	-7.794; -4.173	.065
Firm receptivity	κ_3							-.027	-.131; .014	.005
Market proximity	ξ_1							100.041	98.322; 101.937	.069
Market sphere of Influence	ξ_2							-.347	-1.853; .860	.045
Market receptivity	ξ_3							.356	-1.123; 1.690	.051
Model fit: log likelihood		-298.056	-300.798; -294.230	1.615	-282.556	-287.467; -277.737	.798	-289.103	-297.082; -280.269	.988
Model fit: BIC		-311.314			-303.769			-326.226		

*F: firms; M: markets; SE: standard error is calculated as the standard deviation of the posterior sample divided by \sqrt{ESS} . The Bayesian information criterion (BIC) is given as $LL - .5 \times k \times \ln(n)$, where LL is the log-likelihood of the model, k the number of parameters, and n the number of observations. Models with lower values of BIC are preferred.

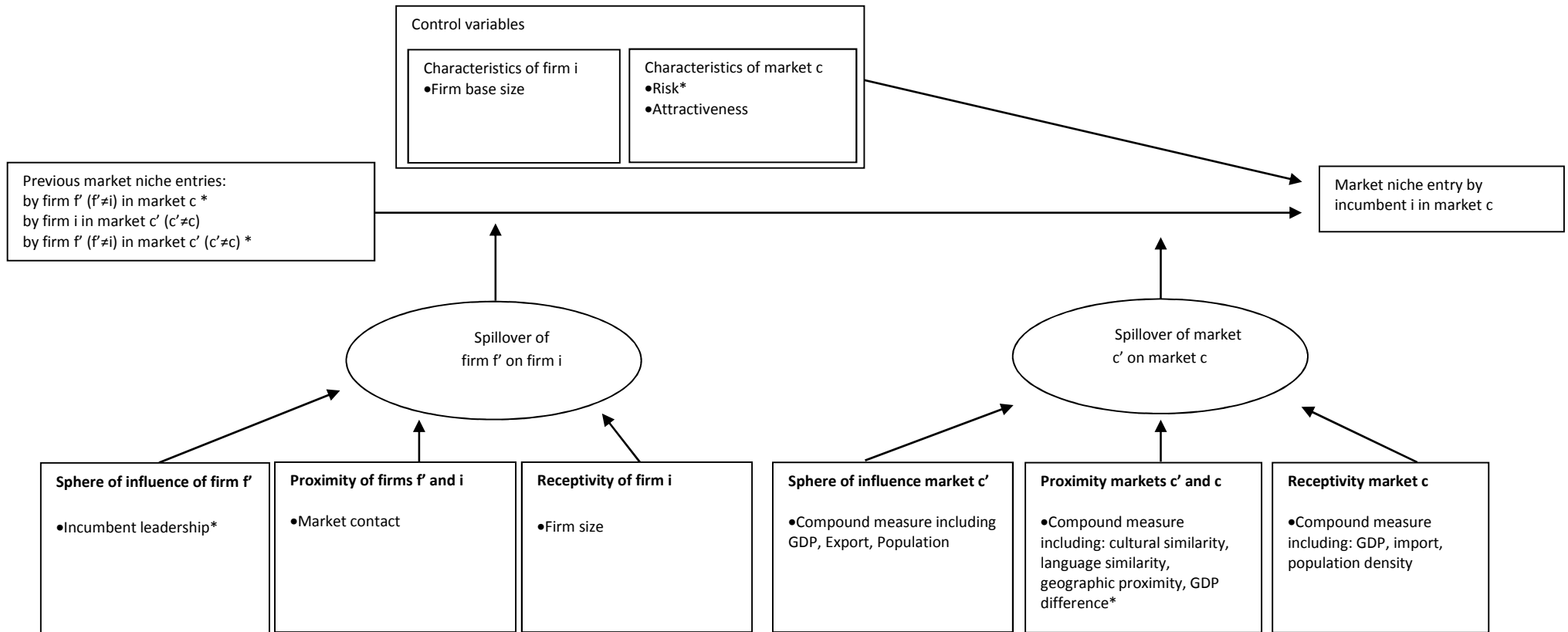
Table 10: parameter estimates Cox PH closed estimation check

		Model 1: controls only		Model 2: controls and types of spillover	
Variables:	Corresponding with:	PE	SE	PE	SE
Firm base size	γ_2	.612****	.159	.555***	.173
Market risk	γ_3	-.501****	.098	-.518****	.096
Market attractiveness	γ_4	.687	.490	.853*	.438
Across F within M*	$\beta_{1,within\ m}$			-.271****	.063
Within F across M*	$\beta_{2,within\ f}$.984	.791
Across F across M*	$\beta_{1,across\ m}$			-.093****	.025
Fit statistics:					
AIC		343.123		309.926	
Likelihood ratio		76.8****		116****	

PE: parameter estimate; SE: standard error; Significance level (two-sided tests): *.10 ; **.05; ***.01; ****<.001

3.12 Figures

Figure 1: conceptual framework



*Significant effects (at level .05) in our empirical analyses

Conclusion

This dissertation bundles three different studies related to strategic industry factors and strategic industry factor innovation. In the first study I theorize and empirically model how the overlap between a firm's resource bundle and the industry's strategic factors related to product markets drives a firm's growth performance in the context of within-industry product market diversification. Thereby I pay special attention to the effects and internal workings of deploying a dynamic capability to create and leverage resources when diversifying. In the second part of this dissertation, I focus on a particular type of strategic industry factor innovation, i.e., new business models. In the second study I offer empirical and theoretical guidance on how ventures can survive when launching a business model. I focus on four market entry decisions, i.e., entry timing, product adaptation, scale of entry, and strategic control, and how they can influence the business model's value drivers and ability to create and capture value. In the third study I empirically model how different firms imitate each other in terms of entering a new market niche related to a new business model. I empirically model what type of information signals related to previous market entries influence an incumbent's entry timing decision and how these signals influence that decision.

In what follows I discuss the main findings for each study, their theoretical and methodological contributions, and their implications for managerial practice. Also, I elaborate on future research opportunities based on this dissertation's main findings and limitations.

Main findings

Study 1 argues that firms can grow through within-industry diversification across product markets, while deploying their dynamic capability to create resources to add to the firm's resource bundle, leverage resources to share existing resources across product markets, and configure resources to create fit among the firm's resources. Results indicate that both resource creation and resource fit have a direct, positive influence on firm growth. It empirically confirms theory on strategic industry factors stating that firm performance is derived from the overlap between an industry's strategic factors and a firm's individual resource bundle. Moreover, the study's outcomes identify a core paradox that is taking place when deploying a dynamic capability, i.e., a paradox between creating and leveraging resources. I empirically show a simultaneous, negative reciprocity between resource creation and resource leverage which has an indirect, negative impact on firm growth. This negative reciprocity denotes a paradox at the heart of the dynamic capability concept. I suggest and discuss learning, managerial and organizational constraints in a firm as the basis for this negative reciprocity. Firms that can cope with this paradox find a way for growth through a dynamic capability. Some firms are affected more by this paradox than others. It implies that a firm's dynamic capability is heterogeneous.

Study 2 addresses the lack of empirical and theoretical guidance on how ventures can succeed when launching a business model. I focus on four market entry decisions, i.e., entry timing, product adaptation, scale of entry, and strategic control, that can influence the business model's value drivers and ability to create and capture value. I find important main and interaction effects on the

survival of the launched business model of a venture's entry timing, product adaptation, and scale of entry. Study 2 empirically describes how a business model innovation, i.e., the free daily newspaper business model, is launched across many countries by different ventures with different entry strategies leading to different survival outcomes. It provides a new viewpoint of looking at business model innovation, i.e., one that is not focused on the innovator and the business model development process, but one that is focused on the innovation and how it is adopted by different ventures. Also, study 2 shows an interesting type of competitive behavior, i.e., a strategy of 'spoiling' the market for everyone with the intention of keeping an innovation out. I conceptualize the business model as a separate unit of analysis, different from industry, firm, product, or technology. Moreover, I theoretically and empirically show that there are not only differences but also an interplay between the business model and a product market strategy, which holds important consequences for the market entry and strategy literature.

In study 3, I model how market entries spill over across firms and markets in a context of high uncertainty for incumbents who need to decide when to enter a new market niche that results from a business model innovation. Entry spillover is previous market niche entries influencing a focal market niche entry decision. I argue that incumbents' entry timing can be influenced by three different types of entry spillover. Results confirm the existence of entry spillover across firms within markets, and show the existence of a neglected type of entry spillover across firms across markets. Spillover across firms across markets embodies an indirect effect among non-directly competing firms across different markets. Also, I model and find particular firm and market characteristics that moderate entry spillover across firms respectively markets. Results imply that entry spillover is non-linear, heterogeneous, and asymmetric. Moreover, study 3 finds a flexible approach to estimate an entry timing hazard model based on Bayesian statistics and Markov-Chain Monte-Carlo simulation techniques which can complement existing closed-form estimation techniques.

Theoretical and methodological contributions

This dissertation makes some important theoretical and methodological contributions. Study 1 contributes to different literature streams. First, there are contributions to the diversification literature. Study 1 adds theoretical and empirical arguments for a link between within-industry diversification and growth performance. Study 1 contributes by distinguishing between both static and dynamic aspects of diversification, i.e., diversification level and activity, and linking them to underlying resource mechanisms such as resource creation, leverage, and configuration to explain firm growth. Although there is already an intensive body of research on the link between diversification and performance based on RBV arguments, study 1 specifically contributes by pointing towards the importance of the bundled nature of resources, the endogeneity between resources and relatedness, an inherent tension between different resource mechanisms, and a relatedness measure making it possible to take these considerations into account. Study 1 not only offers theoretical arguments, but also empirical tests by developing a fine-grained relatedness measure that can link the different aspects of diversification with the underlying theoretical resource logic to explain the outcomes of diversification. Thereby, I take into account business activities and social processes to delineate market boundaries and their relatedness in a less artificial manner than it is often the case in research on diversification across industries. Moreover, the theoretical and empirical arguments of study 1 might also be translated and applied in a cross-industry

diversification context. For example, an indirect relatedness measure has been applied across industries (Bryce and Winter 2009), and RBV arguments related to diversification based on the link between products and resources, resource fungibility, and resource bundle characteristics such as its relevance seem not bounded by industry borders. Also, study 1 adds to the diversification literature by empirically confirming the presence of market structuration and theoretically clarifying its role with respect to a firm's resource bundle. Results show that market structuration has not only an effect on firm profitability as in Li and Greenwood (2004), but also on firm growth. Moreover, study 1 elaborates on how market structuration has important implications for complementarities in a firm's resource bundle. Confirming the presence of market structuration implies that resource complementarities are not only formed internally through for example process or organizational linkages and efforts by middle managers (Taylor and Helfat 2009), but also externally through evolutions in aggregated firm behavior and support structures (Li and Greenwood 2004). Moreover, instead of focusing on the disruptive effects of environmental shocks or events on resource complementarities (e.g., Lee et al. 2010; Siggelkow 2001), the results on market structuration indicate that external evolutions can also bring a supportive contribution to resource complementarities.

Second, study 1 contributes to the dynamic capability literature, more specifically that research domain's call for more empirical work and its link with growth performance (Barreto 2010; Helfat et al. 2007). Study 1 offers a way to empirically grasp dynamic capability deployment by operationalizing resource mechanisms such as resource creation, leverage, and configuration without relying too heavily on the context or individual resources, which contributes to making dynamic capability decisions more tangible, measurable, and applicable. The main findings of study 1 help identifying how a dynamic capability can lead to growth and what the possible pitfalls are. Results indicate that resource creation and resource fit can help firms grow, but that firms should be aware of a tradeoff between creating new resources and leveraging existing ones. A key contribution of study 1 is that it theoretically argues and empirically identifies a core paradox that is taking place when deploying a dynamic capability, i.e., a paradox between creating and leveraging resources. Therefore, study 1 complements and adds to recent research efforts that try to clarify the internal workings of dynamic capability by focusing on the different resource mechanisms (Danneels 2011; Sirmon et al. 2011) and the internal processes (Eisenhardt, Furr, and Bingham 2010; Teece 2007) taking place when deploying a dynamic capability. The results from study 1 show that a key aspect of deploying a dynamic capability is to manage an inherent tension between creating something new and leveraging what already exists. It means that a comprehensive list of underlying microfoundations of a dynamic capability should consist of both processes related to individual resource mechanisms (Teece 2007) and processes related to managing tensions across different resource mechanisms (Eisenhardt et al. 2010; Helfat et al. 2007).

Third, study 1 contributes to the RBV literature. Study 1 further develops both conceptually and methodologically the close link between a firm's resources and products; a link that has been acknowledged since the origins of the RBV, especially by Wernerfelt (1984), but has been treated limitedly in the literature later on. Extending the work by Lee (2008), study 1 shows how a firm's product market choices can help to reveal information on its resource bundle and resource mechanisms related to diversification, and link it with firm growth. An indirect method based on a firm's product market portfolio and the aggregated product market presence of all firms in the

industry, is applied to measure product market relatedness and reveal information on an individual firm's resource bundle. It makes measuring a firm's resource bundle more tangible while acknowledging the bundled nature of a firm's resources. Also, it draws the attention to possibilities for studying the performance potential of a firm based on resource bundle characteristics such as relevance (Lee 2008) in addition to traditional individual resource characteristics such as value, rareness, in-imitability, non-substitutability, and appropriability (Barney 1991). Therefore, study 1 sheds a new light on the potential to study the RBV based on Rumelt's (1984) resource bundle perspective. Study 1 not only indicates that it is possible to empirically study resource bundles and their performance effects, but also that a firm's decisions at the level of the resource bundle, besides decisions at the level of individual resources, can have important implications for both performance and decisions related to developing the resource bundle. Also, the main findings of study 1 are in line with the theory on strategic industry factors (Amit and Schoemaker 1993) implying that a firm needs both an outward focus (towards strategic industry factors) and an inward focus (towards the individual resource bundle) to build and sustain a competitive advantage. Study 1 adds to the literature not only an empirical translation of this theory, but also an integration with the theory on dynamic capability that focuses on purposefully adapting a firm's resource bundle to stay aligned with a possibly changing external environment, while maintaining resource fit within the firm's individual resource bundle.

Studies 2 and 3 add to the literature as follows. First, study 2 contributes to the literature on business models. Study 2 sets clear definitions of the concepts 'business model' and 'business model innovation', while embedding them in previous contributions of the field in order to contribute to a convergence in conceptual language which is in line with and extends earlier efforts by Zott, Amit, and Massa (2011). More conceptual clarity gives current and future research also more background with respect to the added value and usefulness of studying and applying the concepts 'business model' or 'business model innovation' in a particular study. Thereby, study 2 devotes special attention to further elaborate on the important notion that the business model constitutes a separate unit of analysis, different from a firm, product, technology, or industry, that can provide value and a (sustainable) competitive advantage. However, in line with previous research by Zott and Amit (2008), results from study 2 indicate that the potential of a business model to create and capture value also depends on a firm's product market strategy. Study 2 extends Zott and Amit (2008) not only by providing more information on the conceptual and empirical underpinnings of how to better delineate the differences between a business model and a product market strategy, but also by indicating there is an interplay between both such that a business model influences a product market strategy and vice versa which influences survival.

Second, studies 2 and 3 add to the literature on market entry. An important contribution of study 2 is showing that market entry decisions such as entry timing, product adaptation, and entry scale, impact the survival chances of a newly launched business model. It implies that a business model is not always able to create and appropriate value in and out of itself, but should be accompanied by an appropriate market entry strategy. Also, study 2 makes an important contribution by indicating that the influence of the launch decisions on the business model's (sustainable) competitive advantage should be assessed with respect to the launch decisions' impact on the business model's characteristics such as its logic to create and capture value, and its value drivers, while taking into account potential competitive dynamics among business models in the

appropriate (geographic) market. Moreover, study 2 indicates that market entry decisions do not only play a role when launching new products or entering new geographic markets, but also when launching a business model. This offers a new perspective on market entry decisions and their outcome, also when applied to entering new product or geographic markets. Because market entry decisions also have an influence on the underlying business model's performance potential, the underlying business model can influence what the outcome will be of particular market entry decisions taken for new product or geographic market entry. Therefore, trying to explain winning versus failing product introductions or new geographic market entries might be put in a different perspective, when also incorporating in the analysis the underlying business model and the influence of entry decisions (or product and technology characteristics) on that same business model instead of only focusing on product or technology characteristics. Study 3 contributes to the market entry literature by conceptualizing and empirically identifying a new type of market entry imitation behavior, i.e., imitation of market entries among non-competing firms in different geographic markets. It adds a third market entry spillover type besides the two already identified in previous research, i.e., cross firm within market and within firm cross market entry spillover. It implies that firms scanning the environment for interesting ideas are not restricted by national borders nor the current competitive landscape. Study 3 shows the co-existence of both direct and indirect signals related to market entry. Another contribution of study 3 is that it offers a hazard model with several characteristics to create more realistic models for empirical research on market entry timing. The model allows for non-monotonic event rates to enable models to connect more closely with empirical settings, asymmetric effects to include more realistic spillover models, and permanent survivor fractions that follow common sense that not all incumbents always enter new market niches. Moreover, the model could easily be extended with various random and non-linear effects.

Third, studies 2 and 3 add to the innovation literature. They show that copycatting, i.e., imitation or replication of an innovation, is a much-executed practice when a business model innovation occurs. Study 2 shows that copycatting is a viable innovation strategy. Results indicate that many copycats of the original business model innovation are able to survive while creating and capturing value to their customers, themselves, and their partners. Although business model design is important, the approach of study 2 to focus on how to commercialize business models instead of inventing them, makes an important contribution towards better understanding how business models can provide (sustainable) competitive advantage in markets not immune from competitive dynamics. Knowing as a business model innovator that to build and sustain your advantage you also need an appropriate launching strategy is important. Moreover, from an industry perspective, it is also important knowing that one can successfully copycat a business model innovation so that copycats can help fuelling an emerging business. Also, study 3 shows that business model innovation ideas travel fast in both known and unknown territories. Business model innovators should be aware of the danger of imitation, not only in geographic markets in which they are present, but also in unfamiliar territories, because imitation can pre-empt a potential replication strategy. Moreover, results indicate that business model ideas seem to travel more often across firm rather than within firm boundaries, which seems to imply that firms are not always making appropriate use of own data already available to them. Another contribution to the innovation literature is that the high incidence of copycat business models (and their success) shows that intellectual property protection with respect to business model innovation is lacking. However, empirical results show that being a first mover has important survival advantages and being a first mover in all relevant territories

seems to be an even more difficult strategy when launching a business model compared to launching a new product. Therefore, the question whether and how business models can be protected by intellectual property right is an important question for policy makers, innovators, and copycats.

Contributions to managerial practice

This dissertation holds some important managerial contributions. Study 1 provides insights on how to grow in a relatively 'safe' within-industry environment. Managers benefit from more conceptual and empirical knowledge on how dynamic capability and particular resource mechanisms such as resource creation, leverage, and configuration can be deployed to grow when entering new product markets. Especially valuable to practitioners is the finding that managers can capture growth opportunities through diversification and dynamic capability deployment, but that they should be aware of frictions between dynamic capability's different resource mechanisms when developing the resource bundle. Study 1 helps managers identifying possible causes for these tensions in the form of different constraints at different levels within the organization, related to organizational learning, managerial capacity, and organizational structure. Also, the indirect method to gain insights in a firm's product market relatedness and associated resource bundle characteristics such as fit and relevance, are valuable to managerial practice because the methodology is convenient and easily replicable across firms, countries, or industries. To replicate this method, a firm only needs information on competitors' presence in particular product markets which is often considerably easy to obtain from websites or brochures, industry organization databases, or trade journals, at least when focusing on cross-sectional data analyses. Moreover, the methodology makes discussions and decisions with respect to a firm's resource bundle more tangible, transparent, and controllable, whereas previous discussions on a firm's resources and its dynamic capability were considered a black box.

Studies 2 and 3 show that copycatting a business model is a much-practiced and viable strategy that is not restricted by geographic borders. It offers ventures the possibility to grow with a new business model without necessarily being the innovator inventing the new business model. However, it also warns business model innovators that their innovation is difficult to protect, that many other ventures are likely to copy their invention, and that copy behavior is not restricted by geographic borders. The results from study 2 also indicate that business models should be launched with the appropriate market entry decisions to be viable. There are three key launch decisions, i.e., entry timing, product adaptation, and entry scale, that impact the survival of a business model. It should help both incumbents and new entrants that are confronted with new, disruptive markets and business models or designing them themselves, to be better able to foresee and predict success and failure in those new market niches. Policy makers benefit from a better understanding of how new markets and disruptive business model innovations operate, spread out and survive, in order to make more informed decisions whether it is appropriate to protect incumbent markets or not in the case of business model innovation. Also, studies 2 and 3 add to the discussion whether it would be suitable to provide possibilities to protect intellectual property derived from the business model. Moreover, the specific context of our studies, the media industry, is a very important industry from a policy perspective because of its democratizing character and powerful public information channel. Another contribution of study 3 to managerial practice is that it identifies relevant dimensions of

firm scanning activities and how these can influence firm decisions in a complex and uncertain market context. It helps firms to detect not only strong signals from close competitors, but also weak signals on the periphery. It implies that firms confronted with new market niches will be better able to foresee and predict whether, when and where incumbents will react. Also, the results on what firm and market characteristics are moderating entry spillover, will benefit managers through knowing better how to organize scanning activities and gather industry intelligence in terms of what markets and firms to watch for competitive and industry-specific information, without creating data overload.

Limitations and future research opportunities

Based on this dissertation's limitations and main findings, there are some compelling future research opportunities. First, study 1 is limited to market entries, i.e., product market portfolio additions and the associated portfolio breadth, to study resource creation, leverage, and fit, and their impact on firm growth. That neglects other decisions with respect to a firm's product market portfolio that might be considered simultaneously with market entries, e.g., market exits or a focus on portfolio depth instead of breadth, which could impact firm growth. It also neglects other types of resource mechanisms such as deleting resources or accessing external resources, that can change a resource bundle with a possible impact on firm growth. Integrating simultaneous firm decisions on product market entries, exits, and depth, and the associated resource bundle decisions such as resource creation, leverage, deletion, and fit leaves ample room for further research to enhance our understanding of the close interconnectedness between resources and products, and the mechanisms with which firms can change their resource bundles. Also, it is interesting for future research to both conceptually and empirically study whether dynamic capability deployment differs substantially when focusing on market entry, exit, or specialization, i.e., changing a firm's product market portfolio breadth or depth. Thereby not only the type of deployed resource mechanisms can differ, but also the type of 'frictions' arising between resource mechanisms might change. For example, just like particular combinations of breadth and depth of innovation and customer assets can be complementary or detrimental (Fang, Palmatier, and Grewal 2011), future research on dynamic capability deployment can investigate whether particular combinations of resource mechanisms are more likely to create complementarities or frictions.

Second, study 1 is focused on further developing and using an indirect method for measuring a firm's resource bundle based on information from the firm's product market portfolio. However, an indirect method cannot measure individual resources and their characteristics, and has the disadvantage of not being able to exactly pinpointing what it measures. Future research combining both an indirect and direct method for measuring a firm's resource bundle could add significantly to advancing both the indirect and direct methodologies (e.g., insights in each method's blindspots and how both methods converge or diverge in their measurements), and to increasing our understanding of the internal workings, characteristics, and management of a firm's resource bundle. Moreover, it could clarify the heterogeneity of firms with respect to their dynamic capability. In line with Zott's (2003) simulation of dynamic capability heterogeneity linked with cost, learning, and timing of deployment, study 1 tries to uncover some of dynamic capability's heterogeneity related to firm scope, age, and specialist focus. However, more work is needed on dynamic capability's heterogeneity to get a better picture of its contribution to firm performance. Also, combining an

indirect and direct measurement method would help capturing more fully the performance implications of a resource bundle by distinguishing between the performance impact of characteristics of individual resources such as value and rareness amongst others, i.e., the 'traditional' viewpoint propagated in the RBV (e.g., Barney 1991; Peteraf 1993), and characteristics of the resource bundle such as relevance and fit, i.e., a viewpoint initiated by Rumelt (1984), further developed by research on dynamic capability (e.g., Helfat et al. 2007), and advanced by Lee (2008) using the indirect method.

Third, in study 1, controls for environmental fixed effects related to time and place only have a limited impact on firm growth. Moreover, decisions such as resource creation and leverage that are not related to the environment and under control of an individual firm have important growth implications. These results broaden the application domain of the dynamic capability concept by questioning the traditionally accepted statement that dynamic capability is only relevant in a dynamic environment. Studying dynamic capability in a dynamic environment is at the foundational core of dynamic capability (e.g., Helfat et al. 2007; Teece, Pisano, and Shuen 1997). Previous research identifies different environmental dimensions such as velocity, complexity, ambiguity, and unpredictability (Davis, Eisenhardt, and Bingham 2009). However, the empirical identification and large growth consequences of market structuration in study 1 imply that market structuration is an environmental dimension that also needs to be taken into account when assessing performance implications of dynamic capability and make that market structuration deserves further attention in future studies. In its naming, market structuration seems to imply more structure and thus a less dynamic environment. However, market structuration relates also to changes in the environment and seems to impact other dimensions of the environment such as complexity, ambiguity, and unpredictability. It would add to the literature to assess how market structuration can be clearly conceptualized and how market structuration relates to and differs from other environmental dimensions. Moreover, given market structuration's importance for growth, future research should extend Li and Greenwood (2004) by focusing on the underlying drivers of market structuration (e.g., type of drivers, empirical identification of drivers, relative importance of drivers). Also, dynamic capability literature would benefit when assessing dynamic capability deployment and performance implications in various environments that differ along the previously mentioned dimensions.

Fourth, study 2 is limited towards decisions at the time of market launch of the business model and does not consider changes over time of important decisions such as scale, product adaptation, and strategic control. Therefore, future research might shift the focus towards dynamic managerial decision-making during a launch process. For example, how can entrepreneurial firms dynamically adapt their market entry decisions such as product characteristics, scale and strategic control, to improve the odds for success? Also, how do business model and market entry decisions at time of entry influence business model and market entry decisions in a later stage, and are there any path dependencies to observe? And similarly, are there performance feedback loops to observe, i.e., an impact of incurred performance on business model and market entry decisions in later stages, after the time of entry? Moreover, to get a full grasp of its performance impact, it makes sense to split the effect of market attractiveness across decisions related to market entry, market exit, and the exact timing of these decisions. Also, study 2 operationalizes many variables using a dummy approach. Although a dummy approach is defensible given the hypotheses and data at hand, e.g., we are interested in identifying first-mover advantages or not rather than entry order effects, a search for a

more continuous operationalization might create insights through more fine-grained main and non-linear effects. Moreover, a continuous multi-dimensional measure for product adaptation along several key aspects of a product (e.g., consumption experience in terms of place, time, content) can also give more insights in how ventures can create differentiation with or without influencing the underlying business model.

Fifth, considering a business model as a separate unit of analysis creates a number of interesting future research opportunities. To have a better idea on the relative importance of different units of analysis such as the firm, industry, business model, and even product and technology, future research can try to decompose different dimensions of (sustainable) performance into parts influenced by a particular unit of analysis. Previous research trying to decompose inter-firm performance differences focuses on the firm, the industry, and sometimes strategic groups as main units of analysis (e.g., McGahan and Porter 1997; Rumelt 1991; Short et al. 2007). More information on the units of analysis' relative importance not only gives an indication of the value of research done on these units of analysis, but also informs future research to focus on research topics with more impact. Another interesting research opportunity is conducting more research on business model innovation and its importance (e.g., resources devoted to business model innovation), innovation process (e.g., similarities, differences, and interactions with new product development process), performance impact (e.g., impact on innovating firm, existing firms and business models), characteristics (e.g., its similarities and differences with radical, disruptive, and architectural innovation), and diffusion (e.g., diffusion process characteristics and possible differences across adopting populations such as entrepreneurs, consumers, and countries; innovation and imitation drivers and inhibitors; differences with diffusion of other innovation types). Also, are there financial and/or media bubbles associated with business model innovations and their diffusion? The general enthusiasm on this type of innovation together with many entries (and exits in for example the free daily newspaper market) suggest there might be some kind of irrational enthusiasm.

Sixth, study 3 studies the relationship from market insights (cf., information signals related to previous market niche entries) towards marketing capabilities (cf., capturing and interpreting information signals to enter a new market niche). Therefore, study 3 seems to relate to a dynamic capability in the sense that the dynamic capability is undergirded by systematic sensing and scanning processes leading to market entry and associated resource bundle adaptations to enter the market niche appropriately (Day 2011; Teece 2007). However, the main finding in study 3 that there is a market entry spillover across firms across markets suggests that firms may possess a capability that enables for anticipation and appropriate response. Therefore, study 3 seems also in line with what some suggest as being the reciprocal relationship between market insights and marketing capabilities, i.e., that there is also an influence from marketing capabilities on market insights, leading to so-called adaptive marketing capabilities (Day 2011). Future research could further explore the reciprocity between market insights and marketing capabilities by estimating them simultaneously. Moreover, future research could further clarify how dynamic capability and adaptive capability are similar and/or different, especially in an empirical setting. Another limitation of study 3 is the limited use of the flexibility the mathematical model offers. Future research can make more use of that flexibility by e.g., introducing random firm and market effects and modeling the probability of entry in line with a split hazard approach.

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Glossary

Asset: a useful or valuable thing, person, or quality

Business model: defines how a focal firm creates value for customers and how that value is appropriated across itself and its partners. A business model can be represented by a system of interconnected and interdependent activities that transcends the focal firm.

Business model innovation: a new-to-the-world business model with -- relative to the closest existing business model -- one or more changes in one or more ways in the activity system so that the existing business model's value creation and appropriation logic is materially altered

Capability: a complex bundle of skills and accumulated knowledge, exercised through organizational processes that enables a firm to coordinate activities and make use of its assets

Dynamic capability: a firm's capability to change its resource bundle purposefully

Entry spillover: the influence of a previous market niche entry by a particular firm in a particular market on a focal firm's market niche entry in a focal market

MCMC: Markov-Chain Monte-Carlo

MH: Metropolis-Hastings

RBV: resource-based view

Resource bundle: a firm's set of assets, resources, and capabilities

Resources: stocks of available assets that are owned or controlled by the firm

Strategic industry factors: a set of resources and capabilities that have become the prime determinants of firm performance in an industry

Strategic industry factor innovation: introduction of new resources and capabilities or a new combination of existing resources and capabilities that become the prime determinants of firm performance in an industry